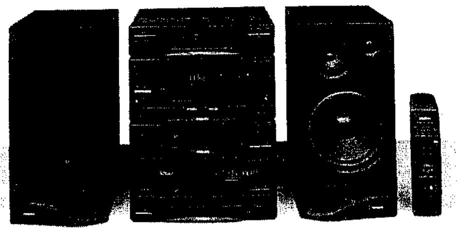
MINI SYSTEM FW91

/21X/22/25

Service
Service
Service



Service Manual

The system FW91 consist of:

Digital mini Tuner	70FT091	4726
Amplifier	70FA091	4751
Digital Cassette Recorder	70DCC091	5322
CD Player	CD 091	V14350
L.S Box left	FB 80 only/21X	4503
L.S Box Richt	FB 80 only/21X	
Remote control	RH6622	

Published by Consumer Electronics Printed in The Netherlands ©Copyright reserved Subject to modification 4822 725 23951

PHILIPS
PCS 57 960

GB Each version of FW91 system consists of following parts:
NL Het systeem FW91 bestaat,voor elke versie,uit de volgende componenten:
F Le systéme FW91 comporte les composants suivants selon la version:
D Das FW91 System baut sich aus für jede Ausführung folgenden Bauteilen auf:
I Il sistema FW91 consiste dei componenti di cui sotto a secondo della versione:

For repair information of the set use the next service manuals:

Digital Tuner : Use service manuel **Tuner 70FT091** codnr.4822 725 23789
Amplifier : Use service manuel **Ampifier 70FA091** codnr.4822 725 23957
Digital Cassette Deck: use service manuel **70DCC091/70DCC450** codnr.4822 725 23787
CD Player : Use service manuel **Compact Disk Player CD091** codnr.4822 725 24038
L.S.Box : Use service manuel **HiFi Loudspeakerbox - Programme 70FB60 70FB70 70FB80** codnr.4822 725 24096

The version FW91/21X consist of:

70FT091/01
70FA091/01X
70DCC091/00
CD 091/00B
FB80/00 Left
FB80/00 Right

Remote control RH6622/01 codnr.4822 218 10467
I.F.U FW91 codnr.4822 736 21775
FM Dipole antenne codnr.4822 303 50032
Cord set codnr.4822 321 10249
AM Frame aerial codnr.4822 158 60622
Lead assy codnr.4822 321 61708
Cinch cord Easylink codnr.4822 321 61821
Cinch-cable codnr.4822 321 22832
Digital Cable codnr.4822 321 61819
L.S. Cord set codnr.4822 321 61921

The version FW91/22 consist of:

70FT091/02
70FA091/00U
70DCC091/00
CD 091/00B

Remote control RH6622/01 codnr.4822 218 10467
I.F.U FW91 codnr.4822 736 21775
FM Dipole antenne codnr.4822 303 50032
Cord set codnr.4822 321 10249
AM Frame aerial codnr.4822 158 60622
Lead assy codnr.4822 321 61708
Cinch cord Easylink codnr.4822 321 61821
Cinch-cable codnr.4822 321 22832
Digital Cable codnr.4822 321 61819

The version FW91/25 consist of:

70FT091/02
70FA091/05U
70DCC091/00
CD 091/00B

Remote control RH6622/01 codnr.4822 218 10467
I.F.U FW91 codnr.4822 736 21775
FM Dipole antenne codnr.4822 303 50032
Cord set codnr.4822 321 10249
AM Frame aerial codnr.4822 158 60622
Lead assy codnr.4822 321 61708
Cinch cord Easylink codnr.4822 321 61821
Cinch-cable codnr.4822 321 22832
Digital Cable codnr.4822 321 61819

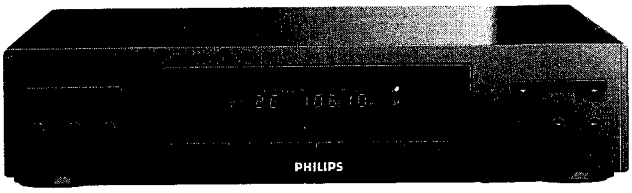
4726

Mini System FW91 Tuner 70FT091

/02/01/22/21

Type plate is located on the amplifier
and refers to system **FW91**/21/22.

Service
Service
Service



Service Manual

TABLE OF CONTENTS: **page**

Specification 2
Connections & Controls 3–4
Safety & Warnings 5
Service Test Program 6–8
Block diagram 9–10
Wiring diagram 11

Tuner : Schematic diagram 12–14
Assembly drawing 15–16
Adjustment table 17–18
Control : Schematic diagram 19–20
Assembly drawing 21–22

Exploded view 23–24
Mechanical partslist 24
Electrical partslist 25–27

Published by Consumer Electronics Printed in The Netherlands Copyright reserved Subject to modification 4822 725 23789

PHILIPS

CS 48 631
4726

SPECIFICATION

POWER SUPPLY : 14V ±1,5V DC stabilized (supply for tuner board)
(via amplifier FA091)
16 – 36V (supply for control board)
–32V stabilized (–V_{KK} grid voltage)
–26V stabilized } filament FTD
4,9V ±20% AC referring to –$26V_{DC}$ } filament FTD
3 x R6 backup batteries

CLOCK

Accuracy : typ. 2s/day limit 4s/day
Alarm : buzzer or selected source
Repeat Alarm : 10 min. (only via remote control and buzzer selected)
Timer functions : Two separate timers
Mains break down : no limit because of buffer batteries
Sleep : 60, 30, 10 minutes (to be selected via remote control)

TUNER

Digital PLL stereo tuner with 30 presets, AUTOPROGRAM and Station Name Diplay.

FM

Aerial input : 75Ω coaxial

Wave range : 87,5 – 108MHz

Grid : 50kHz
IF : 10,7MHz ±25kHz
Sensitivity S/N=26dB : 1,2µV mono
S/N=46dB : 45µV stereo
Distortion : 0,6% typ.
Channel separation : 30dB typ.
LF output voltage : 350 – 450mV (1mV, Δf=75kHz)

AM

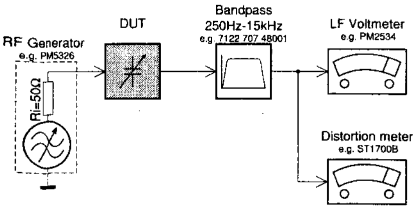
Aerial input : clickfit socket for frame aerial

		MW	LW
Wave range	:		
		522 – 1611kHz	153 – 279kHz
	for USA /17 and Overseas /01	530 – 1710kHz	——
Grid	:	9kHz, 10kHz for USA /17, switchable for /01	3kHz
IF	:	450 ±1kHz	450 ±1kHz
Sensitivity S/N=26dB	:	3mV/m	6mV/m

Distortion : 2% typ.
LF output voltage : ≥40mV (15mV/m, m=30%)

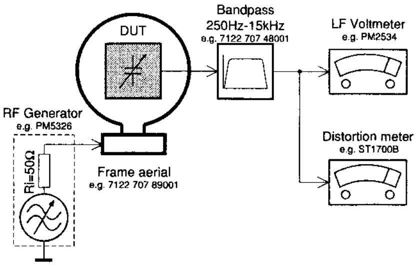
MEASUREMENT SETUP :

Tuner FM

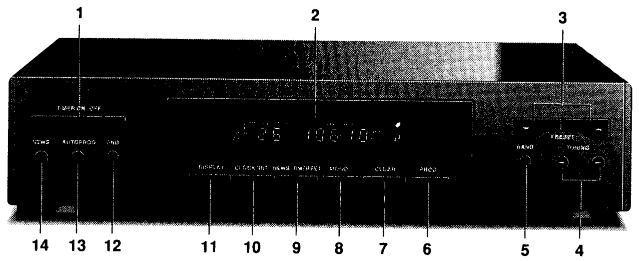

RF Generator
e.g. PM5326
Ri=50Ω
DUT
Bandpass
250Hz-15kHz
e.g. 7122 707 48001
LF Voltmeter
e.g. PM2534
Distortion meter
e.g. ST1700B

Use a bandpass filter to eliminate hum (50Hz, 100Hz) and disturbance from the pilottone (19kHz, 38kHz).

Tuner AM (MW,LW)


DUT
Bandpass
250Hz-15kHz
e.g. 7122 707 48001
LF Voltmeter
e.g. PM2534
RF Generator
e.g. PM5326
Ri=50Ω
Frame aerial
e.g. 7122 707 89001
Distortion meter
e.g. ST1700B

To avoid atmospheric interference all AM-measurements have to be carried out in a Faraday's cage.
Use a bandpass filter (or at least a high pass filter with 250Hz) to eliminate hum (50Hz, 100Hz).



FRONT OF TUNER

1 **TIMER ON/OFF** – for (de)activating the timers
2 **Display** – for showing information
3 **▼ PRESET ▲** – for selecting a preset station
4 **◀ TUNING ▶** – for tuning to a desired frequency
5 **BAND** – for selecting FM, MW or LW band (LW not in all versions)
6 **PROG** – for entering the programming mode to change and store preset stations
7 **CLEAR** – for erasing station names, preset numbers and equalizer/tuner preset combinations
8 **MONO** – for switching between mono and stereo
9 **NEWS/TIMER SET**– for entering the timer and news programming mode to change and store the news and timer settings
10 **CLOCK SET**– for setting date and time of the clock
11 **DISPLAY** – for switching the tuner display between clock, frequency and station name mode
12 **SND** – for assigning a station name and a desired equalizer setting to a preset station
13 **AUTOPROG** – for activating the automatic programming of preset stations
14 **NEWS** – for (de)activating the news timer

TUNING GRID

In North and South America the frequency step between adjacent channels in the AM band must be 10 kHz. In all other parts of the world this step is 9 kHz. In the /01 version of this unit the frequency step can be changed, if necessary.

To change to 9 kHz:

- Switch off the POWER
- Keep BAND **5** and TUNING ◀ pressed down and switch on the POWER again.
- Release the BAND and TUNING keys.
- The display shows for 2 seconds: AM 9 KC

To change to 10 kHz:

- Switch off the POWER
- Keep BAND **5** and TUNING ▶ pressed down and switch on the POWER again.
- Release the BAND and TUNING keys.
- The display shows for 2 seconds: AM 10 KC

Usually the frequency step has been preset in the factory for correct operation in your area.

SWITCHABLE LW WAVEBAND

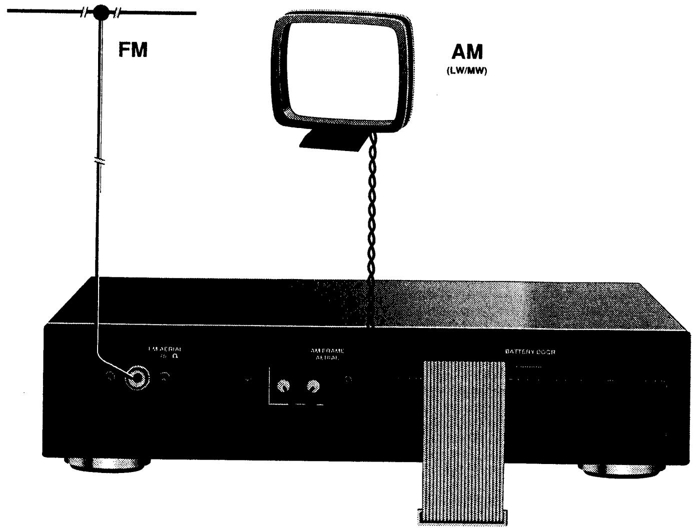
In some countries (Australia, New Zealand, etc.) the LW Waveband does not exist. In the /00 version of this unit it is possible to delete the LW waveband from the BAND menu.

To delete the LW waveband:

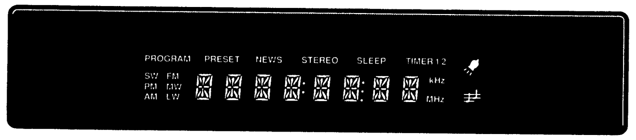
- Switch off the POWER
- Keep BAND **5** and TUNING ▶ pressed down and switch on the POWER again.
- Release the BAND and TUNING keys.
- The display shows for 2 seconds: LW OFF

To include the LW waveband:

- Switch off the POWER
- Keep BAND 5 and TUNING ◀ pressed down and switch on the POWER again.
- Release the BAND and TUNING keys.
- The display shows for 2 seconds: LW ON



DISPLAY



- **PROGRAM** - Flashes when you are in the programming mode to programme a preset station.
- **PRESET** - Lights up when a preset station is selected.
- **NEWS** - Lights up when the news timer is activated
- **STEREO** - Lights up when you are receiving a FM stereo transmitter. If you press MONO **8** while receiving a mono transmitter, STEREO lights up for 2 seconds.
- **SLEEP** - Lights up when the sleep timer is activated.
- **TIMER (1, 2)** lights up to indicate which timer is activated.
- **PM, AM** - to indicate part of the day for the 12-hour clock
- **FM, MW, LW** - to indicate the selected band
- **TEXT DISPLAY** - to show messages, day and time, frequency (and presetnumber) or station name
- **MHz, kHz** - to indicate wether the frequency is given in **MHz** (FM band) or **kHz** (for MW and LW)
- **SYMBOLS** - The bell symbol lights up if the buzzer is selected for an active timer and the music note symbol lights up if a music source is selected for an active timer.

SLEEP (remote control only)

The sleep function is a countdown timer for switching the whole system into standby mode after a specified time.
It enables you to listen to your system prior to falling asleep.
The sleep timer can be set to 60, 30 or 10 minutes.

- Press SLEEP on the remote control to activate the sleep function.
  The display shows SLEEP, followed by 60 MIN.
- Press SLEEP again until the desired sleep time or OFF (to switch the sleep timer off) appears on the display.
  If SLEEP is not pressed for 10 seconds the sleep timer will be set and start counting down to zero. The display will switch back to the previous display mode but the display will contain a indication that the sleep function is activated.

Note:
– The sleep function is cancelled when the system is switched to the standby mode via the STANDBY key on the remote control.

CLOCK

The clock function contains two items: day of the week and the time. It can be set to a 12-hour or 24-hour clock. When the system is in standby mode, day and time are always displayed, but the brightness of the display is low.

- Press CLOCK SET **10** to enter the clock setting mode.
  The display shows the name of a day abbreviated to 3 letters, e.g. SUN.
- Press PRESET ▲ ▼ **3** until the correct day appears on the display.
- Press CLOCK SET **10** to store the correct day.
  The display shows CLOCK followed by 12 HOUR or 24 HOUR.
- Press PRESET ▲ ▼ **3** to select the 12-hour or 24-hour clock.
- Press CLOCK SET **10**.
  Now the display shows either --:-- (24-hour clock) or *AM --:--/PM --:--* (12-hour clock).
- Press TUNING ◀ or ▶ **4** to select the digit to be changed or AM/PM and press PRESET ▲ ▼ **3** to change the selected digit or AM/PM.
- Press CLOCK SET **10** to store the changes and leave the clock setting mode. The seconds are set to zero and the clock starts running.

Notes:
– It is also possible to use the NEXT/PREVIOUS and ◀◀ / ▶▶ keys on the remote control instead of the PRESET **3** and TUNING **4** keys on the tuner.
– The clock can be set when the tuner is in standby mode or active mode.
– For the 12-hour clock: AM 12:00 means midnight and PM 12:00 means noon.
– If a source is selected, BAND **5** is pressed or if no key is pressed in the clock setting mode for 1.5 minutes, the clock setting mode will be left and the last changes (made before leaving this mode) will be stored.

TIMER

You can programme two separate timers.
These timers (timer 1 and timer 2) can be set to a time at which several options are possible:
– the tuner wakes up and is tuned to a selected preset station;
– the CD player wakes up and starts playing a selected track;
– the cassette deck wakes up and starts playing;
– the (optional) DCC recorder wakes up and starts playing a selected track;
– the buzzer starts (automatically for 1 minute).

- Press NEWS/TIMER SET **9** to enter the timer setting mode.
  The display shows SELECT TIMER/NEWS followed by NEWS.
- Press PRESET ▲ ▼ **3** until TIMER 1 or TIMER 2 appears on the display.
- Press NEWS/TIMER SET **9** to confirm the selection of the correct timer.
  The display shows SELECT SOURCE, followed by the last selected source.
- Press PRESET ▲ ▼ **3** until the desired source or the buzzer appears on the display.
- Press NEWS/TIMER SET **9** to store the selected source or buzzer.
  If you have selected CD or DCC, the TRACK will be displayed.
  If you have selected tuner, the PRESET will be displayed.
  If you have selected buzzer, the display will show the selected wakening days.
- If you have selected CD, DCC or tuner: press PRESET ▲ ▼ **3** until the desired track or preset appears and press NEWS/TIMER SET **9** afterwards to store the track or preset.
  The display shows the selected wakening days.
- Press PRESET ▲ ▼ **3** to select the wakening days: ONCE, DAILY, WEEKEND (Saturday and Sunday) or WEEKDAY (Monday – Friday).
- Press NEWS/TIMER SET **9** to store the selection.
  The display shows START TIME,followed by a time.
- Press TUNING ◀ or ▶ **4** to select the digit to be changed and press PRESET ▲ ▼ **3** to change the selected digit.
- Press NEWS/TIMER SET **9** to store the start time. If you selected the buzzer as the source, the timer setting mode is ended, otherwise the display will show STOP TIME, followed by a time.
- Press TUNING ◀ or ▶ **4** to select the digit to be changed and press PRESET ▲ ▼ **3** to change the selected digit.
- Press NEWS/TIMER SET **9** to store the timer settings and leave the timer setting mode.
- Press TIMER ON/OFF **1** (or TIMER on the remote control) until the desired timer combination is displayed. You can choose between: timer 1 activated, timer 2 activated, both timers activated or both timers deactivated.
  When TIMER ON/OFF **1** (or TIMER on the remote control) is not pressed for 3 seconds, the last displayed timer (combination) is activated.
  The display shows which timers are activated. If a timer is activated, the display also shows whether a buzzer (the bell symbol) or a sound source (the musical notes) has been selected for the timer.

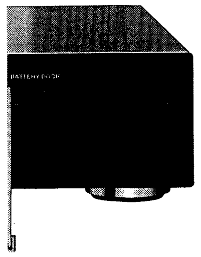
Notes:
– when the timer is activated from standby, the volume will increase gradually to a fixed level over a 30-second period.
– during dubbing, the timer will not function.
– It is not possible to start recording on the cassette deck or DCC recorder via timers.
– If the set is in the recording mode at the start time of a timer, the timer is deactivated.
– It is also possible to use the NEXT/PREVIOUS and ◀◀ or ▶▶ keys on the remote control instead of the PRESET **3** and TUNING **4** keys on the tuner.
– If a source is selected, BAND **5** is pressed or if no key is pressed in the timer setting mode for 1,5 minutes, the timer setting mode will be left and the last changes (made before leaving this mode) will be stored.
– When a CD player, cassette deck or DCC recorder is selected as the source, the unit must be loaded with a CD or cassette, otherwise the tuner will be selected as the source with the last selected preset station. If there is no cassette in deck B, the cassette deck will play the cassette in deck A.
– Any source selection on the system will deactivate the timer.
– Any playing source will be interrupted at the start time of a timer and will continue after the stop time.
– If the start time and the stop time of a timer are equal, then the timer will be deactivated.
– If the start time of timer 1 is equal to the start time of timer 2 then timer 2 will be cancelled.
– The last start time has a higher priority than an earlier start time.
Example: If the start time of timer 2 is before the stop time of timer 1, the selected source of timer 1 will go to stop and the selected source of timer 2 will be heard.

REPEAT BUZZER (remote control only)

When the buzzer is switched on, it is possible to stop it sounding and delay its restart time for 10 minutes.

- Press one of the two AUDIO VOLUME keys or one of the two BALANCE keys on the remote control to temporarily switch off the buzzer. After 10 minutes it will start sounding again.
- Press BUZZER OFF on the remote control to permanently switch off the buzzer.

Note:
– Pressing any key on the system itself has no effect on the buzzer.



programming

n is selected.
activated
ing a FM stereo
ceiving a mono
nds.
s activated.
mer is activated.
e 12-hour clock
nd
and time,
name
cy is given in

he buzzer is
note symbol
an active timer.

switching the
ecified time.
to falling asleep.
minutes.

tivate the sleep

0 MIN.
p time or OFF
the display.
e sleep timer
. The display
ode but the
eep function is

system is
NDBY key on

CLOCK

The clock function contains two items: day of the week and the time. It can be set to a 12-hour or 24-hour clock. When the system is in standby mode, day and time are always displayed, but the brightness of the display is low.

- Press CLOCK SET **10** to enter the clock setting mode. The display shows the name of a day abbreviated to 3 letters, e.g. SUN.
- Press PRESET ▲ ▼ **3** until the correct day appears on the display.
- Press CLOCK SET **10** to store the correct day. The display shows CLOCK followed by 12 HOUR or 24 HOUR.
- Press PRESET ▲ ▼ **3** to select the 12-hour or 24-hour clock.
- Press CLOCK SET **10**. Now the display shows either --:-- (24-hour clock) or *AM --:--/PM --:--* (12-hour clock).
- Press TUNING ◀ or ▶ **4** to select the digit to be changed or AM/PM and press PRESET ▲ ▼ **3** to change the selected digit or AM/PM.
- Press CLOCK SET **10** to store the changes and leave the clock setting mode. The seconds are set to zero and the clock starts running.

Notes:

- It is also possible to use the NEXT/PREVIOUS and ◀◀ / ▶▶ keys on the remote control instead of the PRESET **3** and TUNING **4** keys on the tuner.
- The clock can be set when the tuner is in standby mode or active mode.
- For the 12-hour clock: AM 12:00 means midnight and PM 12:00 means noon.
- If a source is selected, BAND **5** is pressed or if no key is pressed in the clock setting mode for 1.5 minutes, the clock setting mode will be left and the last changes (made before leaving this mode) will be stored.

TIMER

You can programme two separate timers.
These timers (timer 1 and timer 2) can be set to a time at which several options are possible:

- the tuner wakes up and is tuned to a selected preset station;
- the CD player wakes up and starts playing a selected track;
- the cassette deck wakes up and starts playing;
- the (optional) DCC recorder wakes up and starts playing a selected track;
- the buzzer starts (automatically for 1 minute).

- Press NEWS/TIMER SET **9** to enter the timer setting mode. The display shows SELECT TIMER/NEWS followed by NEWS.
- Press PRESET ▲ ▼ **3** until TIMER 1 or TIMER 2 appears on the display.
- Press NEWS/TIMER SET **9** to confirm the selection of the correct timer. The display shows SELECT SOURCE, followed by the last selected source.
- Press PRESET ▲ ▼ **3** until the desired source or the buzzer appears on the display.
- Press NEWS/TIMER SET **9** to store the selected source or buzzer.
  If you have selected CD or DCC, the TRACK will be displayed.
  If you have selected tuner, the PRESET will be displayed.
  If you have selected buzzer, the display will show the selected wakening days.
- If you have selected CD, DCC or tuner: press PRESET ▲ ▼ **3** until the desired track or preset appears and press NEWS/TIMER SET **9** afterwards to store the track or preset. The display shows the selected wakening days.
- Press PRESET ▲ ▼ **3** to select the wakening days: ONCE, DAILY, WEEKEND (Saturday and Sunday) or WEEKDAY (Monday – Friday).
- Press NEWS/TIMER SET **9** to store the selection. The display shows START TIME,followed by a time.
- Press TUNING ◀ or ▶ **4** to select the digit to be changed and press PRESET ▲ ▼ **3** to change the selected digit.
- Press NEWS/TIMER SET **9** to store the start time. If you selected the buzzer as the source, the timer setting mode is ended, otherwise the display will show STOP TIME, followed by a time.
- Press TUNING ◀ or ▶ **4** to select the digit to be changed and press PRESET ▲ ▼ **3** to change the selected digit.
- Press NEWS/TIMER SET **9** to store the timer settings and leave the timer setting mode.
- Press TIMER ON/OFF **1** (or TIMER on the remote control) until the desired timer combination is displayed. You can choose between: timer 1 activated, timer 2 activated, both timers activated or both timers deactivated.
  When TIMER ON/OFF **1** (or TIMER on the remote control) is not pressed for 3 seconds, the last displayed timer (combination) is activated.
  The display shows which timers are activated. If a timer is activated, the display also shows whether a buzzer (the bell symbol) or a sound source (the musical notes) has been selected for the timer.

Notes:

- when the timer is activated from standby, the volume will increase gradually to a fixed level over a 30-second period.
- during dubbing, the timer will not function.
- It is not possible to start recording on the cassette deck or DCC recorder via timers.
- If the set is in the recording mode at the start time of a timer, the timer is deactivated.
- It is also possible to use the NEXT/PREVIOUS and ◀◀ or ▶▶ keys on the remote control instead of the PRESET **3** and TUNING **4** keys on the tuner.
- If a source is selected, BAND **5** is pressed or if no key is pressed in the timer setting mode for 1,5 minutes, the timer setting mode will be left and the last changes (made before leaving this mode) will be stored.
- When a CD player, cassette deck or DCC recorder is selected as the source, the unit must be loaded with a CD or cassette, otherwise the tuner will be selected as the source with the last selected preset station. If there is no cassette in deck B, the cassette deck will play the cassette in deck A.
- Any source selection on the system will deactivate the timer.
- Any playing source will be interrupted at the start time of a timer and will continue after the stop time.
- If the start time and the stop time of a timer are equal, then the timer will be deactivated.
- If the start time of timer 1 is equal to the start time of timer 2 then timer 2 will be cancelled.
- The last start time has a higher priority than an earlier start time.
  Example: If the start time of timer 2 is before the stop time of timer 1, the selected source of timer 1 will go to stop and the selected source of timer 2 will be heard.

REPEAT BUZZER (remote control only)

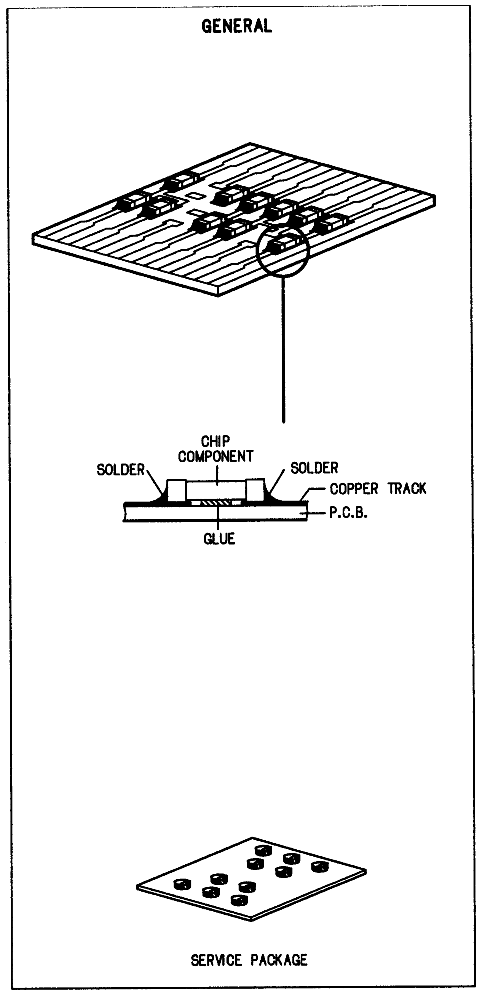
When the buzzer is switched on, it is possible to stop it sounding and delay its restart time for 10 minutes.

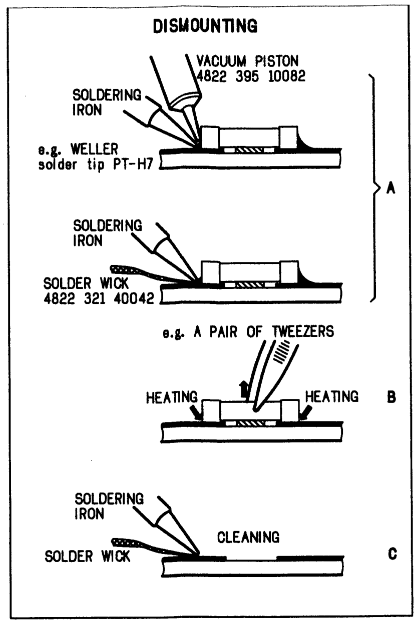
- Press one of the two AUDIO VOLUME keys or one of the two BALANCE keys on the remote control to temporarily switch off the buzzer. After 10 minutes it will start sounding again.
- Press BUZZER OFF on the remote control to permanently switch off the buzzer.

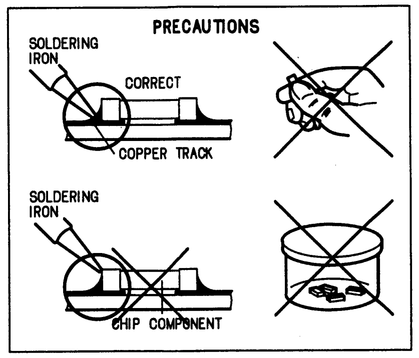
Note:

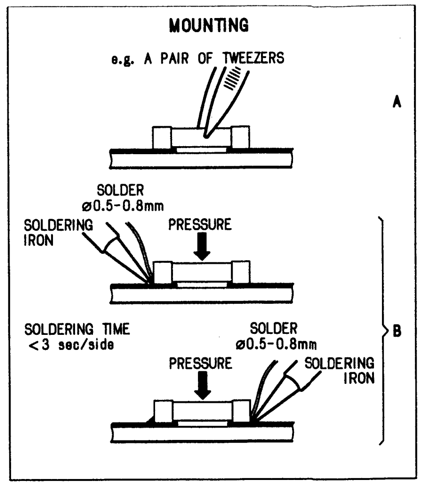
- Pressing any key on the system itself has no effect on the buzzer.

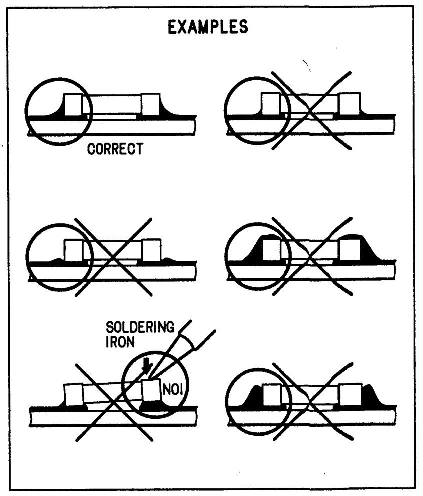
HANDLING CHIP COMPONENTS



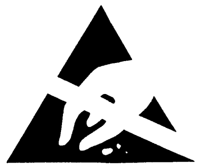








ESD



(GB) WARNING

All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically.
When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance. Keep components and tools at this potential.

(F) ATTENTION

Tous les IC et beaucoup d´autres semi-conducteurs sont sensibles aux décharges statiques (ESD). Leur longévite pourrait être considérablement écourtée par le fait qu´aucune précaution nést prise à leur manipulation.
Lors de réparations, s´assurer de bien être relié au même potentiel que la masse de l´appareil et enfileer le bracelet serti d´une résistance de sécurité.
Veiller à ce que les composants ainsi que les outils que l´on utilise soient également à ce potentiel.

(D) WARNUNG

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD).
Unsorgfältige Behandlung im Reparaturfall kann die Lebensdauer drastisch reduzieren.
Sorgen Sie dafür, daß sie im Reparaturfall über ein Pulsarmband mit Widerstand mit dem Massepotential des Gerätes verbunden sind.
Halten Sie Bauteile und Hilfsmittel ebenfalls auf diesem Potential.

(NL) WAARSCHUWING

Alle IC´s en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).
Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen. Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.
Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

(I) AVVERTIMENTO

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).
La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione. Durante le riparationi occorre quindi essere collegato allo stesso potenziale che quello della massa delápparecchio tramite un braccialetto a resistenza.
Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

(GB)
Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.

(D)
Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Originalzustand des Gerätes darf nicht verändert werden. Für Reparaturen sind Originalersatzteile zu verwenden.

(F)
"Pour votre sécurite, ces documents doivent être utilisés par des spécialistes agrées, seuls habilités à réparer votre appareil en panne".

(I)
Le norme di sicurezza estigono che l´apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambiago identici a quelli specificati.

(F)
Les normes de sécurité exigent que l`appareil soit remis à l`état d`origine et que soient utilisées les pièces de rechange identiques à celles spécifiées.

(NL)
Veiligheidsbepalingen vereisen, dat het apparaat in zijn oorspronkeliijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast.

PRESET	VERSION					UNIT
	Europe 3-band	East Europe 3-band	USA 2-band	JAPAN 2-band	OVERSEA 2-band	
1	87,5	87,5	87,5	76	87,5	MHz
2	108	108	108	90	108	MHz
3	98	98	98	76	98	MHz
4	89,7	89,7	89,7	76	89,7	MHz
5	93	93	93	76	93	MHz
6	104,9	104,9	104,9	76	104,9	MHz
7	522	522	530	522	530	kHz
8	1611	1611	1710	1629	1710	kHz
9	540	540	540	540	540	kHz
10	549	549	550	549	550	kHz
11	558	558	560	558	560	kHz
12	1494	1494	1500	1494	1500	kHz
13	153	153	1600	76	1600	kHz/MHz
14	279	279	87,5	76	87,5	kHz/MHz
15	153	153	87,5	76	87,5	kHz/MHz
16	198	198	87,5	76	87,5	kHz/MHz
17	270	270	87,5	76	87,5	kHz/MHz
18	87,5	65,81	87,5	76	87,5	MHz
19	87,5	74	87,5	76	87,5	MHz
20	999	999	1000	999	1000	kHz

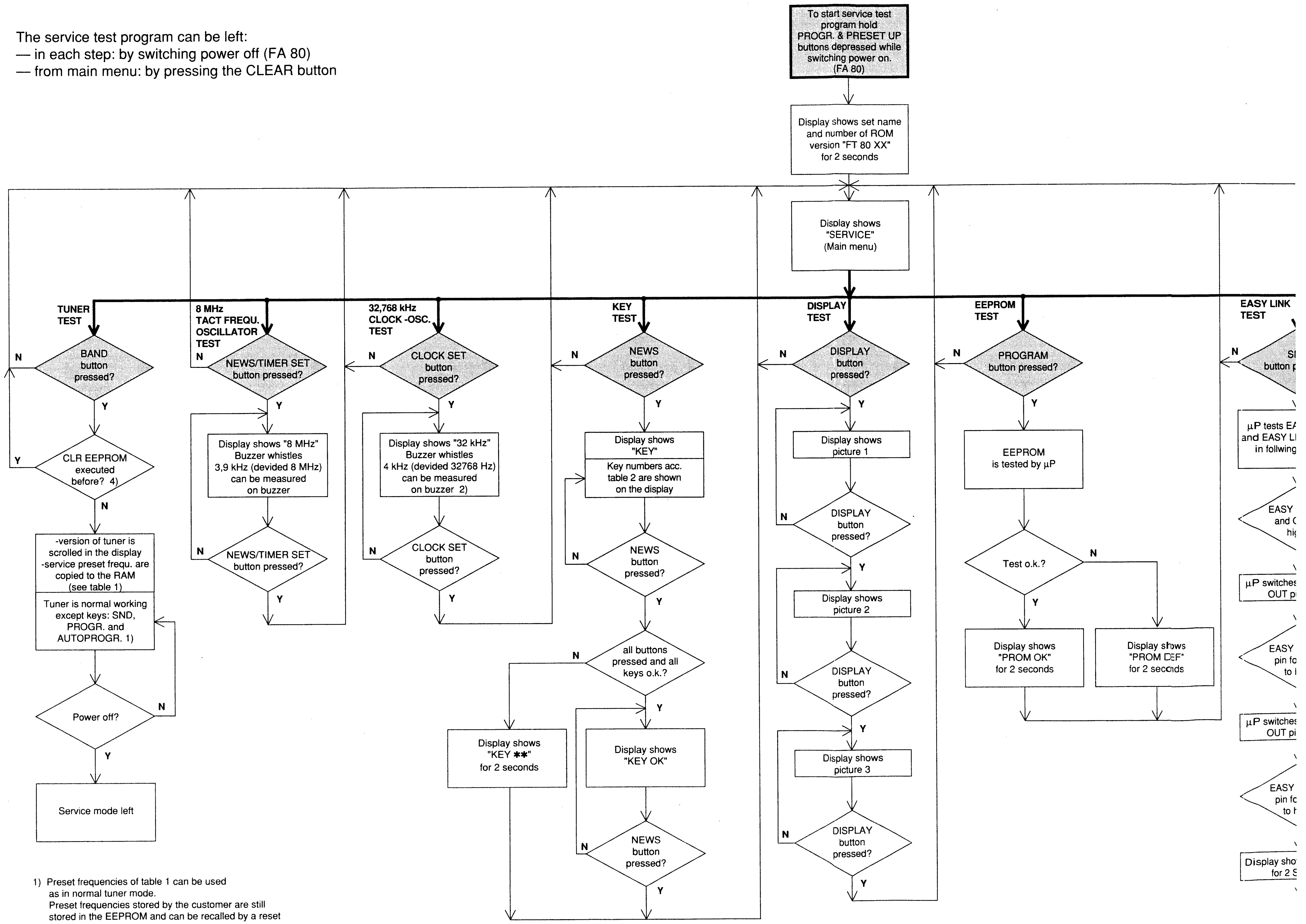
table 1

Key activated	Display shows
Timer on/off	04
Autoprog.	10
SND	0C
Display	07
Clock set	03
News/timer Set	0B
Mono	0F
Clear	0E
Prog.	0A
Preset down	06
Preset up	09
Band	02
Tuning down	01
Tuning up	05

table 2

SERVICE TEST PROGRAM

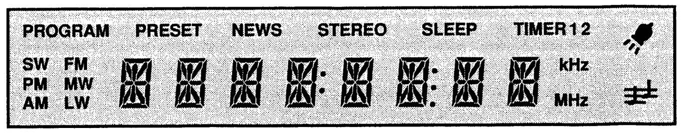
The service test program can be left:
— in each step: by switching power off (FA 80)
— from main menu: by pressing the CLEAR button


To start service test program hold PROGR. & PRESET UP buttons depressed while switching power on. (FA 80)
Display shows set name and number of ROM version "FT 80 XX" for 2 seconds
Display shows "SERVICE" (Main menu)
TUNER TEST
BAND button pressed?
N
Y
CLR EEPROM executed before? 4)
N
Y
-version of tuner is scrolled in the display -service preset frequ. are copied to the RAM (see table 1)
Tuner is normal working except keys: SND, PROGR. and AUTOPROGR. 1)
Power off?
N
Y
Service mode left
8 MHz TACT FREQU. OSCILLATOR TEST
N
NEWS/TIMER SET button pressed?
Y
Display shows "8 MHz" Buzzer whistles 3,9 kHz (devided 8 MHz) can be measured on buzzer
N
NEWS/TIMER SET button pressed?
Y
32,768 kHz CLOCK -OSC. TEST
N
CLOCK SET button pressed?
Y
Display shows "32 kHz" Buzzer whistles 4 kHz (devided 32768 Hz) can be measured on buzzer 2)
N
CLOCK SET button pressed?
Y
KEY TEST
N
NEWS button pressed?
Y
Display shows "KEY"
Key numbers acc. table 2 are shown on the display
N
NEWS button pressed?
Y
N
all buttons pressed and all keys o.k.?
Y
Display shows "KEY **" for 2 seconds
Display shows "KEY OK"
N
NEWS button pressed?
Y
DISPLAY TEST
N
DISPLAY button pressed?
Y
Display shows picture 1
N
DISPLAY button pressed?
Y
Display shows picture 2
N
DISPLAY button pressed?
Y
Display shows picture 3
N
DISPLAY button pressed?
Y
EEPROM TEST
N
PROGRAM button pressed?
Y
EEPROM is tested by µP
Test o.k.?
N
Y
Display shows "PROM OK" for 2 seconds
Display shows "PROM DEF" for 2 seconds
EASY LINK TEST
N
SI
button p
µP tests EA
and EASY LI
in follwing
EASY
and C
hi
µP switches
OUT p
EASY
pin fo
to l
µP switches
OUT pi
EASY
pin fo
to h
Display sho
for 2 S

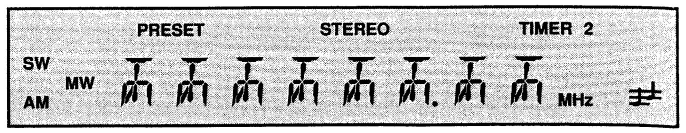
---

1) Preset frequencies of table 1 can be used
as in normal tuner mode.
Preset frequencies stored by the customer are still
stored in the EEPROM and can be recalled by a reset
of the µP (switching power off).

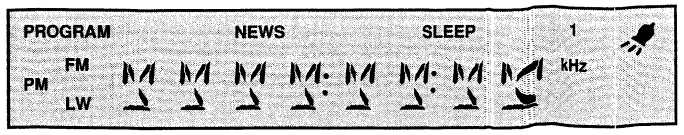
2) Tolerance: 4095,795 — 4096,204 Hz
(244,1528 — 244,1284 µs)


PROGRAM
PRESET
NEWS
STEREO
SLEEP
TIMER 1 2
SW FM
PM MW
AM LW
kHz
MHz

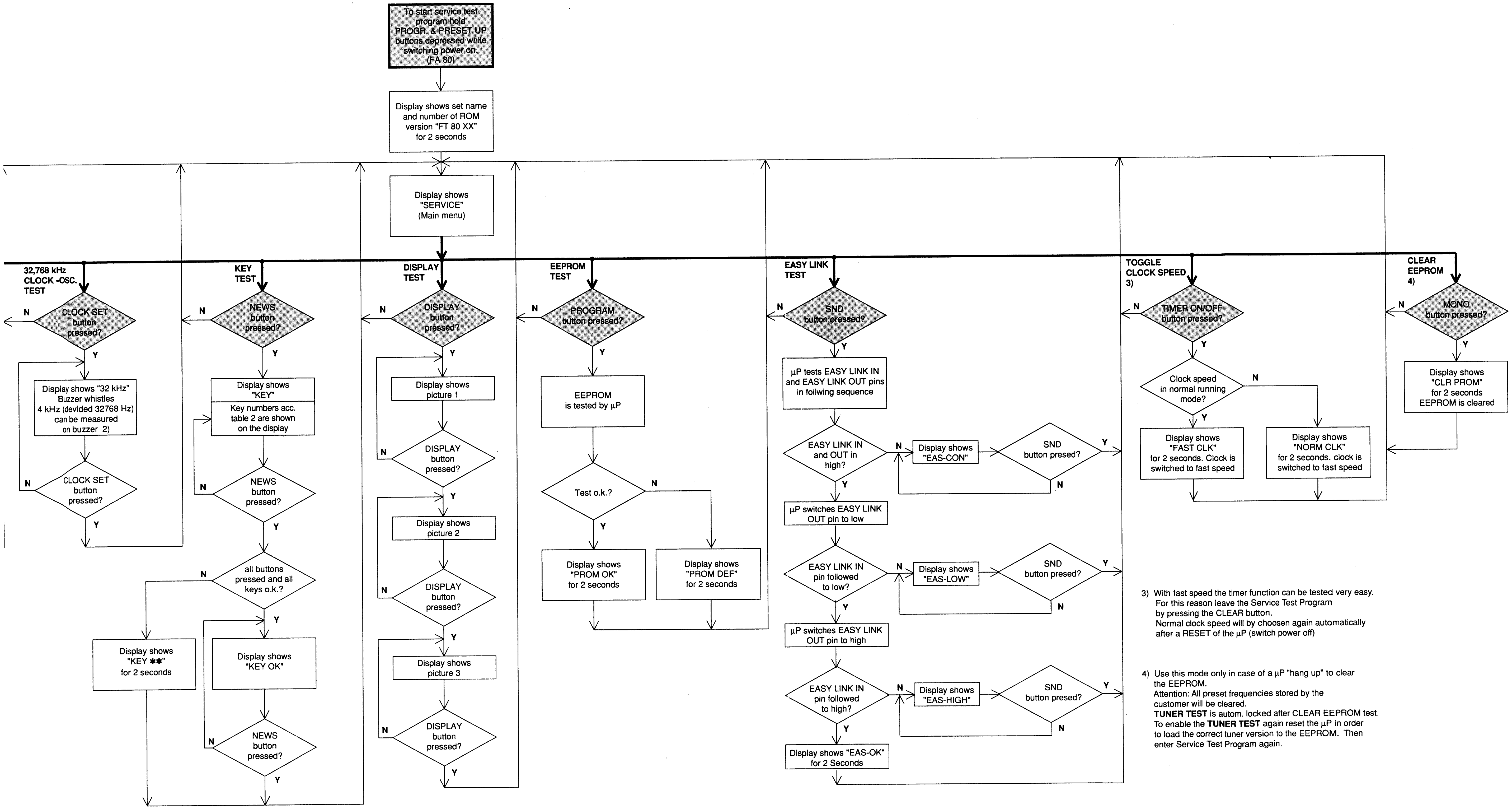
picture 1


PRESET
STEREO
TIMER 2
SW
MW
AM
MHz

picture 2

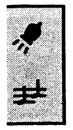

PROGRAM
NEWS
SLEEP
1
PM
FM
LW
kHz

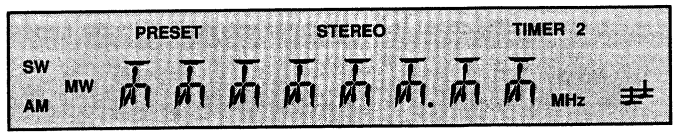
picture 3


To start service test program hold PROGR. & PRESET UP buttons depressed while switching power on. (FA 80)
Display shows set name and number of ROM version "FT 80 XX" for 2 seconds
Display shows "SERVICE" (Main menu)
32,768 kHz CLOCK -OSC. TEST
CLOCK SET button pressed?
N
Y
Display shows "32 kHz" Buzzer whistles 4 kHz (devided 32768 Hz) can be measured on buzzer 2)
CLOCK SET button pressed?
KEY TEST
NEWS button pressed?
Display shows "KEY"
Key numbers acc. table 2 are shown on the display
NEWS button pressed?
all buttons pressed and all keys o.k.?
Display shows "KEY **" for 2 seconds
Display shows "KEY OK"
NEWS button pressed?
DISPLAY TEST
DISPLAY button pressed?
Display shows picture 1
DISPLAY button pressed?
Display shows picture 2
DISPLAY button pressed?
Display shows picture 3
DISPLAY button pressed?
EEPROM TEST
PROGRAM button pressed?
EEPROM is tested by µP
Test o.k.?
Display shows "PROM OK" for 2 seconds
Display shows "PROM DEF" for 2 seconds
EASY LINK TEST
SND button pressed?
µP tests EASY LINK IN and EASY LINK OUT pins in follwing sequence
EASY LINK IN and OUT in high?
Display shows "EAS-CON"
SND button presed?
µP switches EASY LINK OUT pin to low
EASY LINK IN pin followed to low?
Display shows "EAS-LOW"
SND button presed?
µP switches EASY LINK OUT pin to high
EASY LINK IN pin followed to high?
Display shows "EAS-HIGH"
SND button presed?
Display shows "EAS-OK" for 2 Seconds
TOGGLE CLOCK SPEED 3)
TIMER ON/OFF button pressed?
Clock speed in normal running mode?
Display shows "FAST CLK" for 2 seconds. Clock is switched to fast speed
Display shows "NORM CLK" for 2 seconds. clock is switched to fast speed
CLEAR EEPROM 4)
MONO button pressed?
Display shows "CLR PROM" for 2 seconds EEPROM is cleared

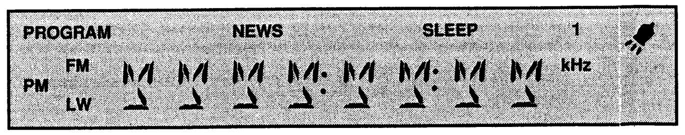
3) With fast speed the timer function can be tested very easy.
For this reason leave the Service Test Program
by pressing the CLEAR button.
Normal clock speed will by choosen again automatically
after a RESET of the µP (switch power off)

4) Use this mode only in case of a µP "hang up" to clear
the EEPROM.
Attention: All preset frequencies stored by the
customer will be cleared.
TUNER TEST is autom. locked after CLEAR EEPROM test.
To enable the **TUNER TEST** again reset the µP in order
to load the correct tuner version to the EEPROM. Then
enter Service Test Program again.



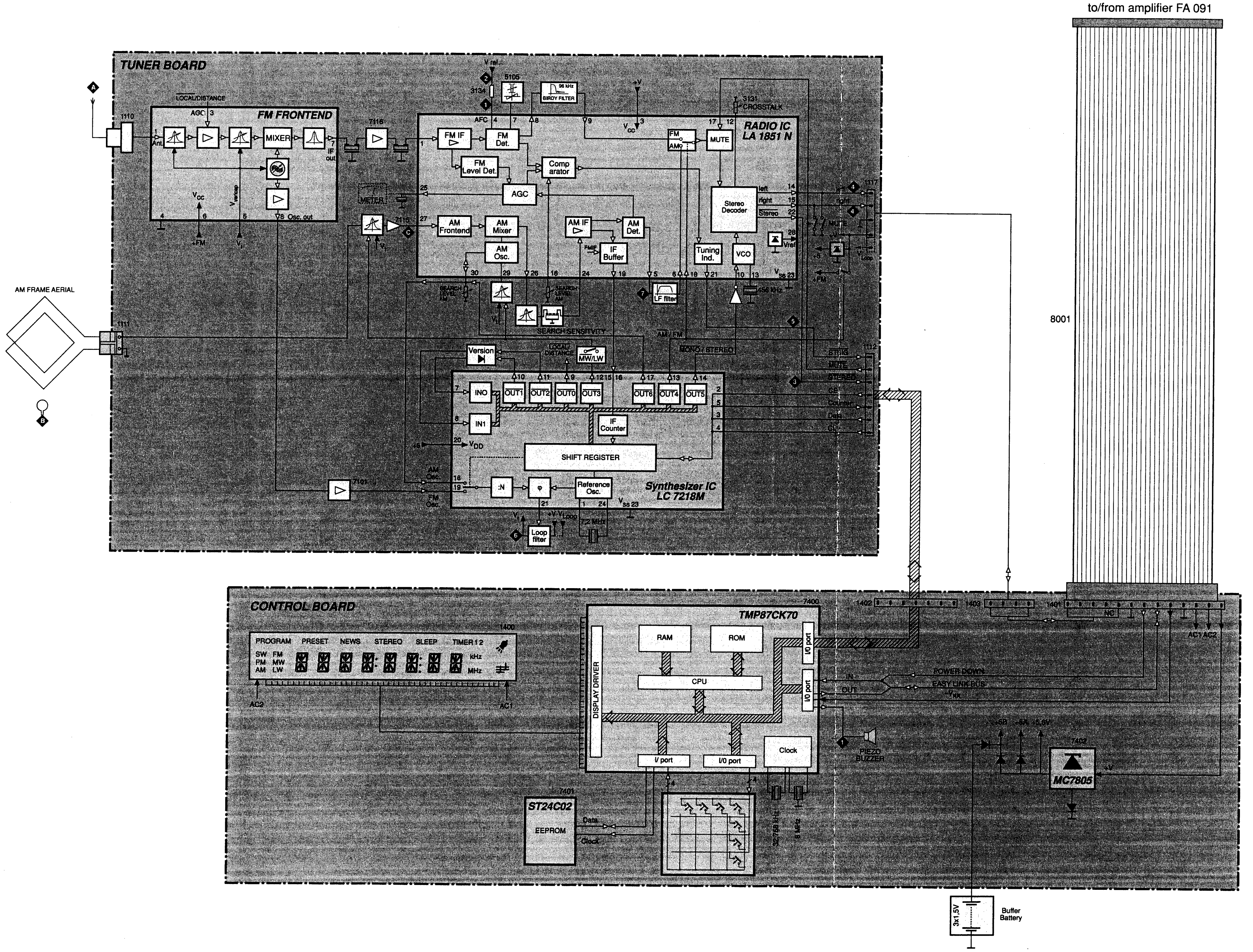

PRESET
STEREO
TIMER 2
SW
AM
MW
MHz

picture 2

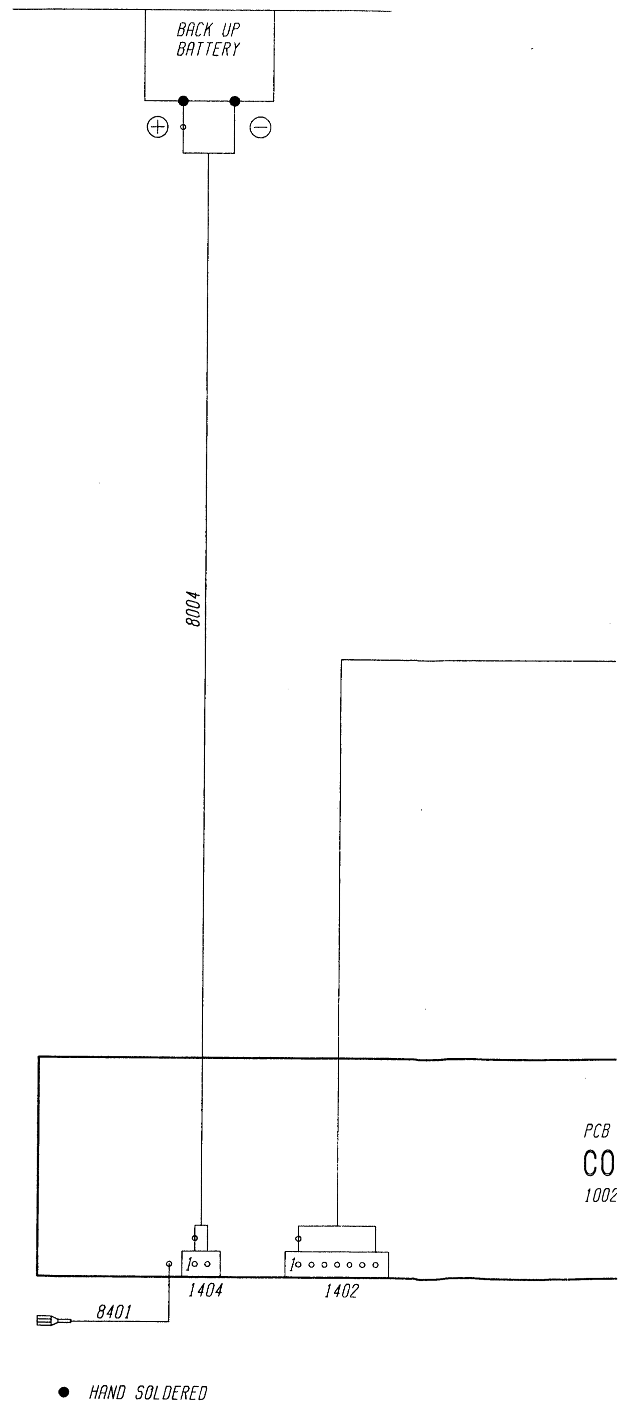

PROGRAM
NEWS
SLEEP
1
PM
FM
LW
kHz

picture 3

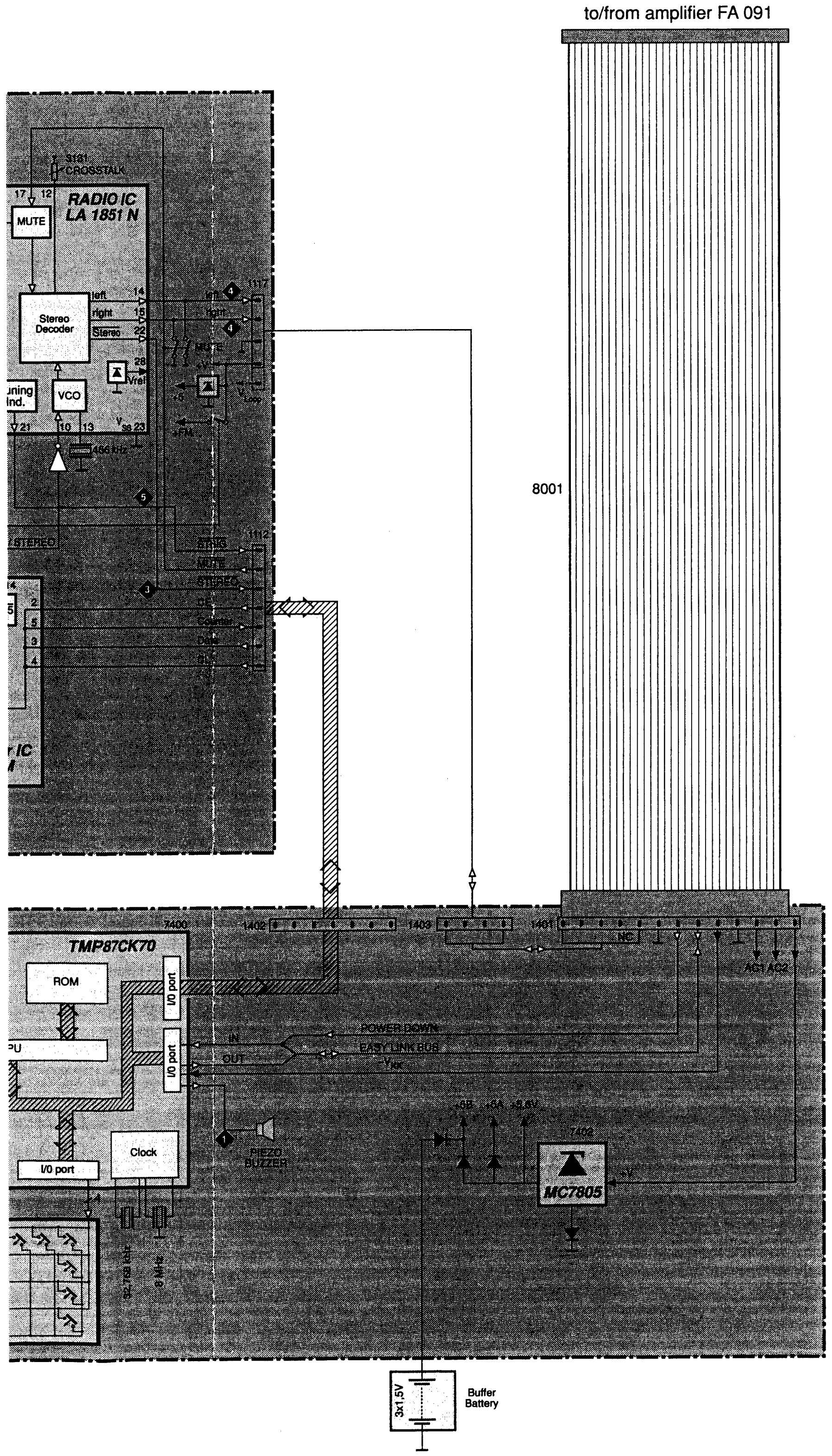
BLOCK DIAGRAM

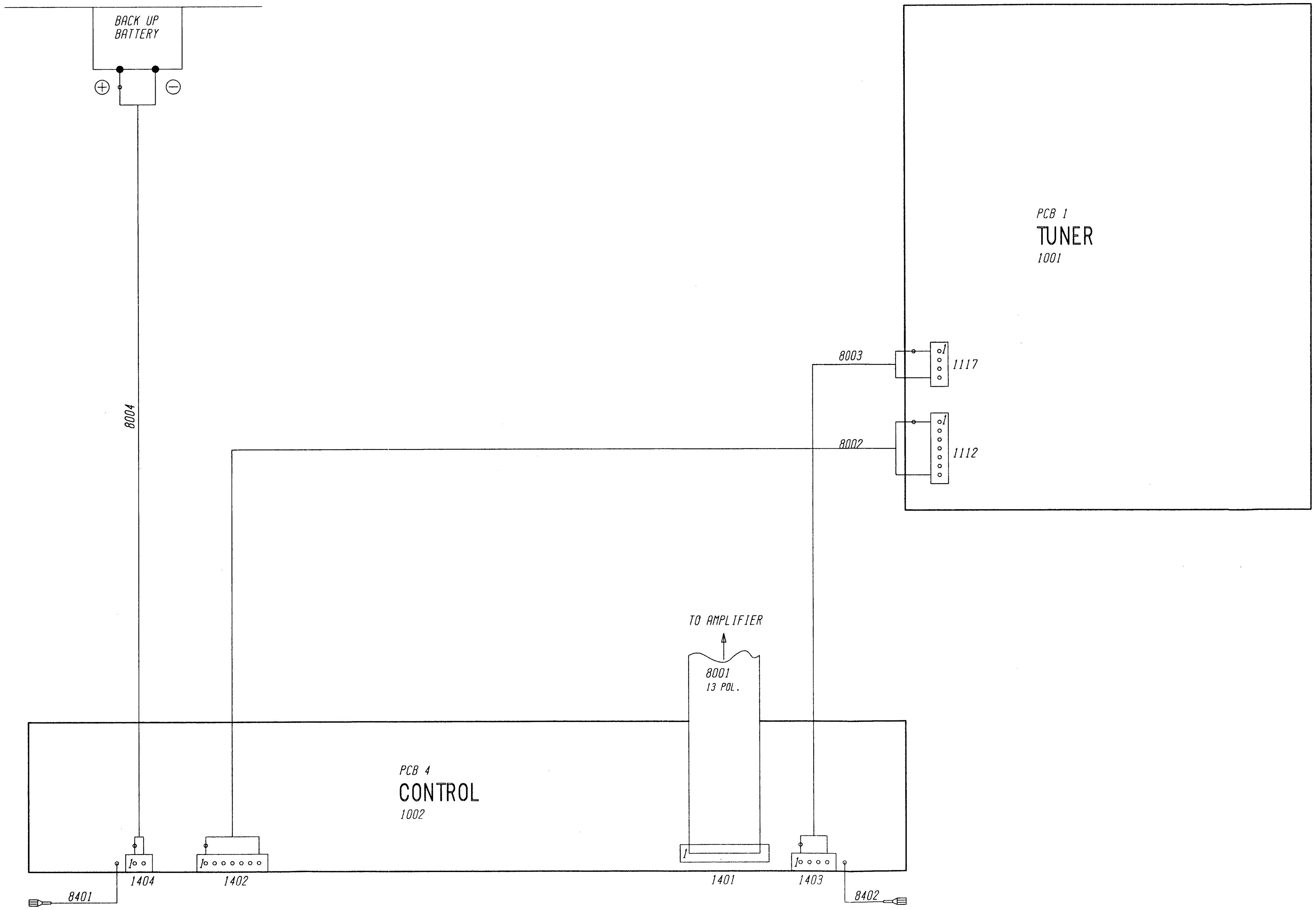

to/from amplifier FA 091
TUNER BOARD
FM FRONTEND
LOCAL/DISTANCE
AGC
MIXER
IF out
Osc. out
Vcc
Vvaricap
+FM
1110
7116
METER
RADIO IC LA 1851 N
FM IF
FM Det.
FM Level Det.
Comp arator
AGC
AM Frontend
AM Mixer
AM Osc.
AM IF
AM Det.
IF Buffer
FM AM
MUTE
Stereo Decoder
Tuning Ind.
VCO
3131 CROSSTALK
BIRDY FILTER
5105
3134
V ref
AFC
left
right
Stereo
Vref
456 KHz
LF filter
SEARCH SENSITIVITY
AM FM
MONO / STEREO
AM FRAME AERIAL
1111
8001
Version
LOCAL/ DISTANCE
MW/LW
INO
IN1
OUT1
OUT2
OUT0
OUT3
OUT6
OUT4
OUT5
IF Counter
SHIFT REGISTER
VDD
AM Osc.
FM Osc.
:N
φ
Reference Osc.
Synthesizer IC LC 7218M
Loop filter
7.2 MHz
7101
Strobe
Data
Counter
Clock
CONTROL BOARD
PROGRAM
PRESET
NEWS
STEREO
SLEEP
TIMER 1 2
SW FM
PM MW
AM LW
kHz
MHz
AC2
AC1
1400
TMP87CK70
7400
RAM
ROM
CPU
DISPLAY DRIVER
I/0 port
Clock
I/ port
I/0 port
IN
OUT
POWER DOWN
EASY LINK BUS
PIEZO BUZZER
ST24C02
7401
EEPROM
Data
Clock
32.768 kHz
8 MHz
1402
1403
1401
NC
AC1 AC2
MC7805
7402
3x1.5V
Buffer Battery

WIRING DIAGRAM


BACK UP BATTERY
8004
PCB
CO
1002
1404
1402
8401
● HAND SOLDERED

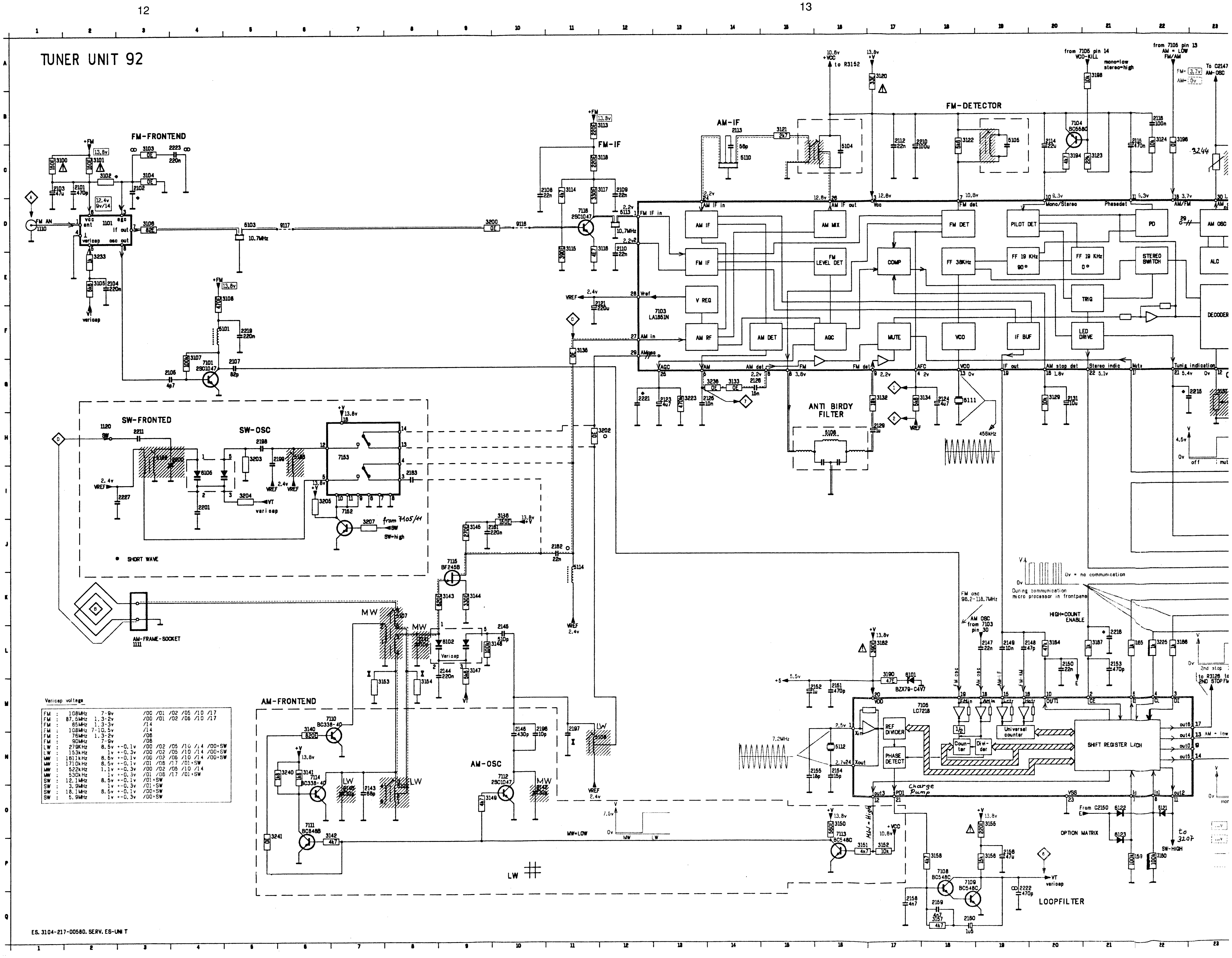
WIRING DIAGRAM


to/from amplifier FA 091
8001
3181 CROSSTALK
RADIO IC
LA 1851 N
MUTE
Stereo Decoder
left
right
Stereo
VCO
Tuning Ind.
450 kHz
1117
1112
TMP87CK70
7400
ROM
I/O port
I/O port
I/O port
Clock
1402
1403
1401
NC
AC1 AC2
POWER DOWN
EASY LINK BUS
IN
OUT
PIEZO BUZZER
MC7805
7402
32.768 kHz
8 MHz
3x1.5V
Buffer Battery


BACK UP BATTERY
⊕
⊖
8004
PCB 1
TUNER
1001
8003
1117
8002
1112
TO AMPLIFIER
8001
13 POL.
PCB 4
CONTROL
1002
1
1404
1402
1401
1403
8401
8402

● HAND SOLDERED

TUNER UNIT 92

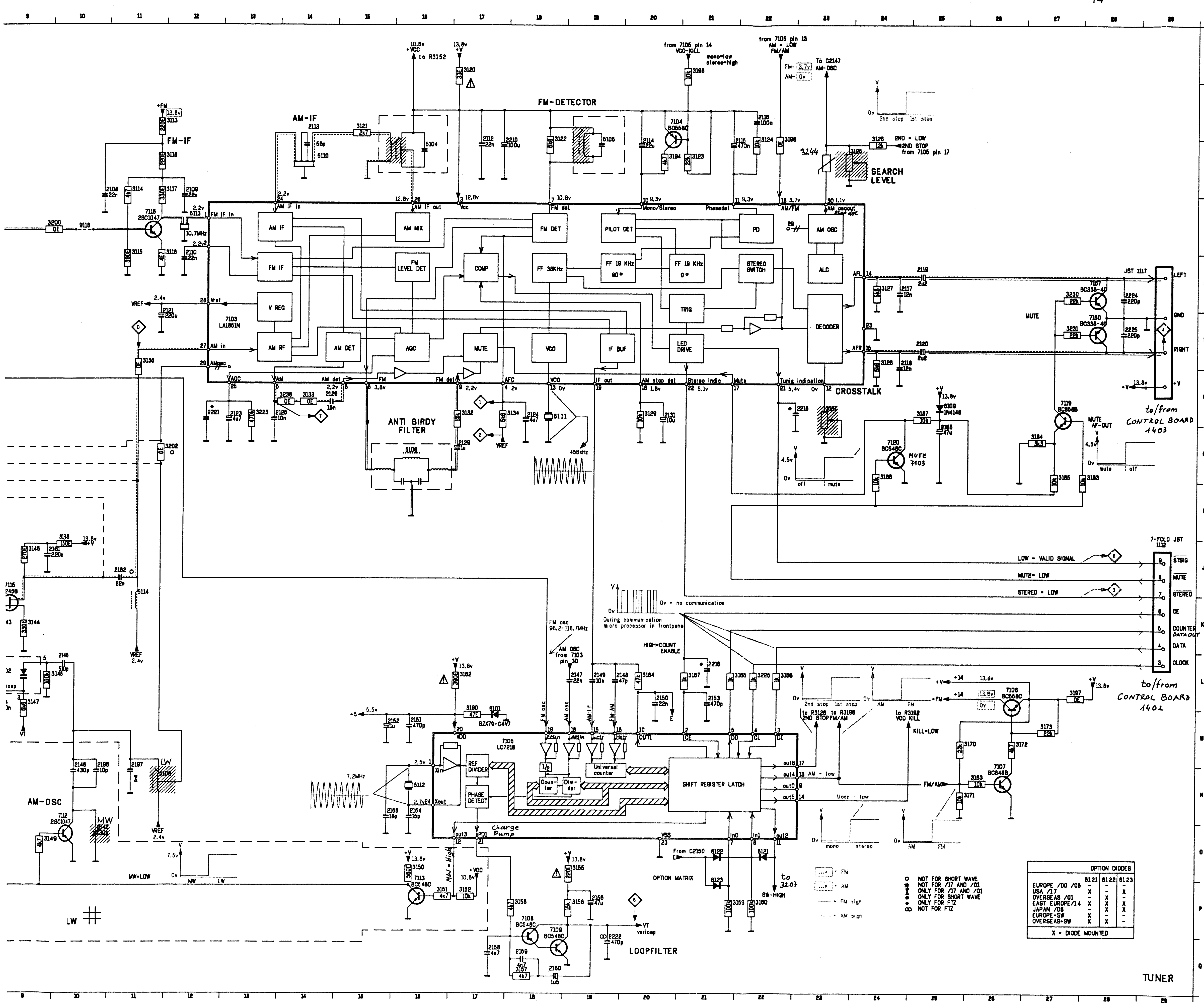

12
13
FM-FRONTEND
FM-IF
AM-IF
FM-DETECTOR
SW-FRONTED
SW-OSC
AM-FRONTEND
AM-OSC
ANTI BIRDY FILTER
LOOPFILTER
OPTION MATRIX
SHORT WAVE
AM-FRAME-SOCKET 1111
FM AN 1110
7103 LA1851N
7105 LC7218
AM IF
AM MIX
FM DET
PILOT DET
PD
AM OSC
FM IF
FM LEVEL DET
COMP
FF 38KHz
FF 19 KHz 90°
FF 19 KHz 0°
STEREO SWITCH
ALC
V REG
TRIG
DECODER
AM RF
AM DET
AGC
MUTE
VCO
IF BUF
LED DRIVE
REF DIVIDER
PHASE DETECT
Counter
Divider
Universal counter
SHIFT REGISTER LATCH
Charge Pump
from 7105/11
SW=high
MW
LW
MW=LOW
HIGH=COUNT ENABLE
Ov = no communication
During communication micro processor in frontpanel
FM osc 98.2-118.7MHz
AM OSC from 7103 pin 30
from 7106 pin 14 VCO-KILL
mono=low stereo=high
from 7106 pin 13 AM = LOW FM/AM
to 3207
SW-HIGH
456kHz
7.2MHz
10.7MHz

Varicap voltage

FM	:	108MHz	7-9v		/00 /01 /02 /05 /10 /17
FM	:	87.6MHz	1.3-2v		/00 /01 /02 /06 /10 /17
FM	:	85MHz	1.3-3v		/14
FM	:	108MHz	7-10.5v		/14
FM	:	76MHz	1.3-2v		/08
FM	:	90MHz	7-9v		/08
LW	:	279KHz	8.5v	+-0.1v	/00 /02 /05 /10 /14 /00+SW
LW	:	153kHz	1v	+-0.3v	/00 /02 /05 /10 /14 /00+SW
MW	:	1611kHz	8.6v	+-0.1v	/00 /02 /06 /10 /14 /00+SW
MW	:	1710kHz	8.5v	+-0.1v	/01 /08 /17 /01+SW
MW	:	522kHz	1.1v	+-0.3v	/00 /02 /05 /10 /14
MW	:	530kHz	1v	+-0.3v	/01 /08 /17 /01+SW
SW	:	12.1MHz	8.5v	+-0.1v	/01+SW
SW	:	3.9MHz	1v	+-0.3v	/01+SW
SW	:	18.1MHz	8.5v	+-0.1v	/00+SW
SW	:	5.9MHz	1v	+-0.3v	/00+SW

ES. 3104-217-00580. SERV. ES-UNIT

CS 48 636


FM-IF
AM-IF
FM-DETECTOR
SEARCH LEVEL
ANTI BIRDY FILTER
CROSSTALK
AM-OSC
LOOPFILTER
LW
MW
7103 LA1851N
7105 LC7218
AM IF
AM MIX
FM DET
PILOT DET
PD
AM OSC
FM IF
FM LEVEL DET
COMP
FF 38KHz
FF 19 KHz 90°
FF 19 KHz 0°
STEREO SWITCH
ALC
V REG
TRIG
DECODER
AM RF
AM DET
AGC
MUTE
VCO
IF BUF
LED DRIVE
REF DIVIDER
PHASE DETECT
Counter
Divider
Universal counter
SHIFT REGISTER LATCH
from 7105 pin 14 VCO-KILL
mono=low stereo=high
from 7105 pin 13 AM = LOW FM/AM
To C2147 AM-OSC
2ND = LOW 2ND STOP from 7105 pin 17
2nd stop 1st stop
JST 1117
LEFT
GND
RIGHT
MUTE
to/from CONTROL BOARD 1403
MUTE AF-OUT
mute off
MUTE 7103
7-FOLD JST 1112
LOW = VALID SIGNAL
MUTE = LOW
STEREO = LOW
STSIG
MUTE
STEREO
CE
COUNTER DATA OUT
DATA
CLOCK
to/from CONTROL BOARD 1402
0v = no communication
During communication micro processor in frontpanel
HIGH=COUNT ENABLE
FM osc 98,2-118,7MHz
AM OSC from 7103 pin 30
450kHz
7.2MHz
Charge Pump
MW = High
MW=LOW
From C2150
OPTION MATRIX
to 3207
SW-HIGH
to R3126 to R3198 2ND STOP FM/AM
to R3198 VCO KILL
KILL=LOW
AM = low
FM/AM
Mono = low
mono stereo
AM FM
VT varicap
3244
10,7MHz
BZX79-C4V7
1N4148
= FM
= AM
FM sign
AM sign
○ NOT FOR SHORT WAVE
✱ NOT FOR /17 AND /01
⌶ ONLY FOR /17 AND /01
✱ ONLY FOR SHORT WAVE
✱ ONLY FOR FTZ
∞ NOT FOR FTZ

OPTION DIODES	6121	6122	6123
EUROPE /00 /05	-	-	-
USA /17	X	-	X
OVERSEAS /01	-	X	-
EAST EUROPE/14	X	X	X
JAPAN /08	-	X	X
EUROPE+SW	X	-	-
OVERSEAS+SW	X	X	-

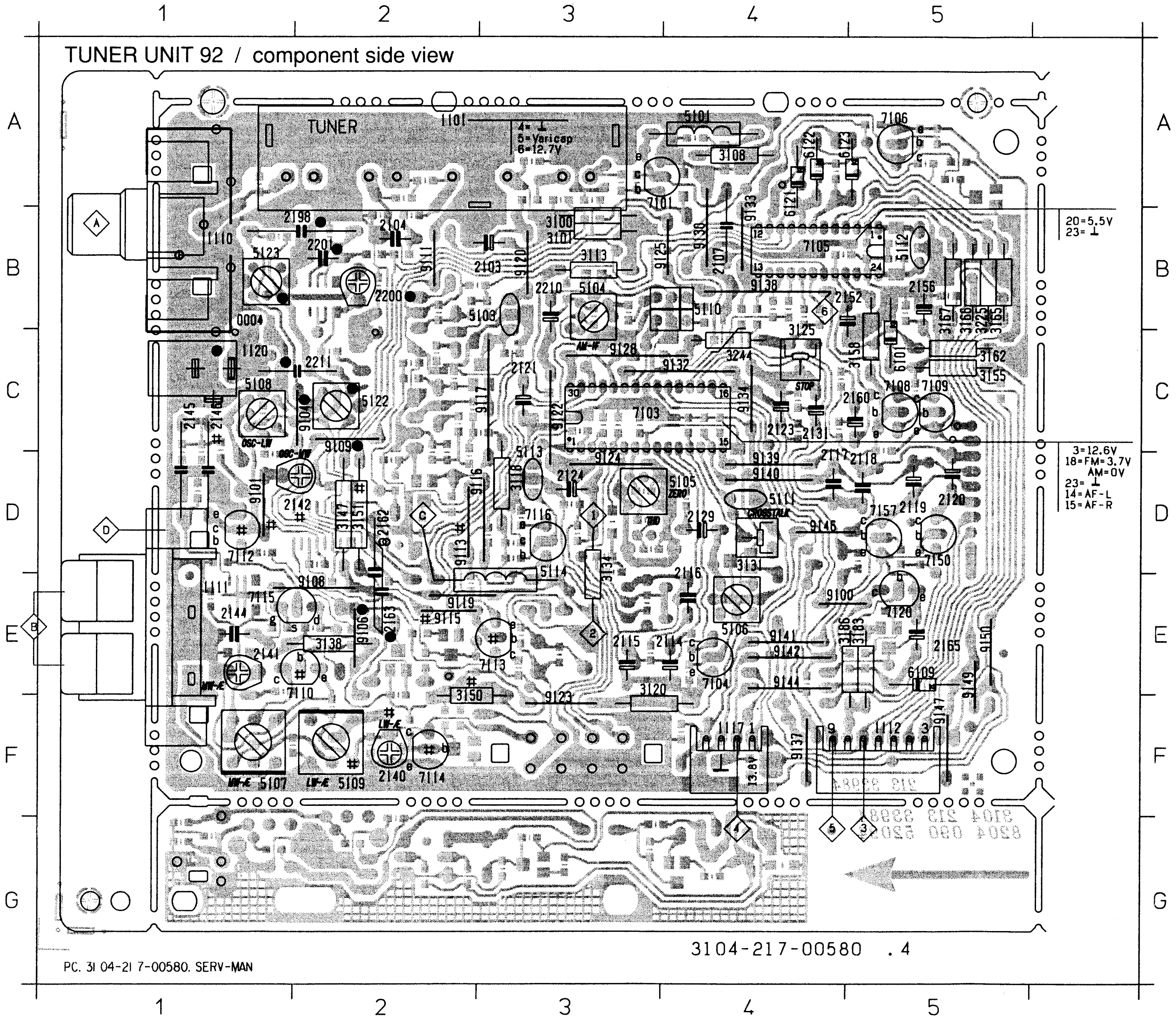
X = DIODE MOUNTED

TUNER

1101	D 2	7101	G 4
2101	C 2	7103	F13
2102	C 3	7104	B20
2103	C 1	7105	M18
2104	E 2	7106	L26
2105	G 4	7107	M26
2107	G 5	7108	P18
2108	C10	7109	P18
2109	C12	7110	M 7
2110	D12	7111	O 6
2112	B17	7112	N10
2113	B14	7113	O16
2114	C20	7114	N 6
2115	C21	7115	J 9
2116	B22	7116	D11
2117	E24	7119	G27
2118	F24	7120	H24
2119	E25	7150	F28
2120	F25	7152	I 7
2121	F11	7153	H 7
2123	G13	7157	E28
2124	G18	9116	D10
2125	G13	9117	D 6
2126	G14		
2129	H17		
2131	G20		
2140	O 7		
2141	L 8		
2142	O10		
2143	O 7		
2144	L 8		
2145	L10		
2146	M10		
2147	L19		
2148	L19		
2149	L19		
2150	L20		
2151	M16		
2152	M15		
2153	L21		
2154	N16		
2155	N15		
2156	P19		
2158	Q17		
2159	Q18		
2160	Q18		
2161	J 9		
2162	J11		
2163	I 8		
2165	H25		
2196	M10		
2197	M11		
2198	H 5		
2199	H 5		
2200	H 3		
2201	I 4		
2210	C17		
2211	H 3		
2215	G22		
2216	L21		
2219	F 5		
2221	G12		
2222	P19		
2223	C 4		
2224	E28		
2225	F28		
2227	I 2		
3100	C 1		
3101	C 2		
3102	C 2		
3103	C 3		
3104	C 3		
3105	E 2		
3106	D 3		
3107	F 4		
3108	E 4		
3113	B11		
3114	C11		
3115	D11		
3116	D11		
3117	C11		
3118	C11		
3120	A17		
3121	B15		
3122	B18		
3123	C21		
3124	B22		
3126	B24		
3127	E24		
3128	F24		
3129	G20		
3132	G17		
3133	G14		
3134	G17		
3135	F11		
3140	M 6		
3141	N 6		
3142	O 7		
3143	K 8		
3144	K 9		
3145	J 9		
3146	I10		
3147	L 9		
3138	L 9		
3149	O 9		
3150	O16		
3151	P16		
3152	P17		
3153	M 7		
3154	M 8		
3155	O19		
3156	P19		
3157	Q18		
3158	P18		
3159	P21		
3160	P22		
3162	L17		
3163	N26		
3164	L20		
3165	L21		
3166	L22		
3167	L21		
3170	M25		
3171	N25		
3172	M26		
3173	M27		
3183	H27		
3184	H27		
3185	H27		
3186	H24		
3187	G25		
3190	L17		
3194	C20		
3196	B22		
3197	L27		
3198	A21		
3200	D10		
3202	H11		
3203	H 5		
3204	I 5		
3205	I 6		
3207	J 7		
3223	G13		
3225	L22		
3230	E27		
3231	F27		
3233	E 2		
3236	G14		
3240	N 5		
3241	O 5		
5104	C16		
5105	B19		
5106	H16		
5107	K 8		
5111	G18		
5112	N16		
6101	L17		
6102	L 8		
6105	I 4		
6109	G25		
6121	O22		
6122	O21		
6123	O21		

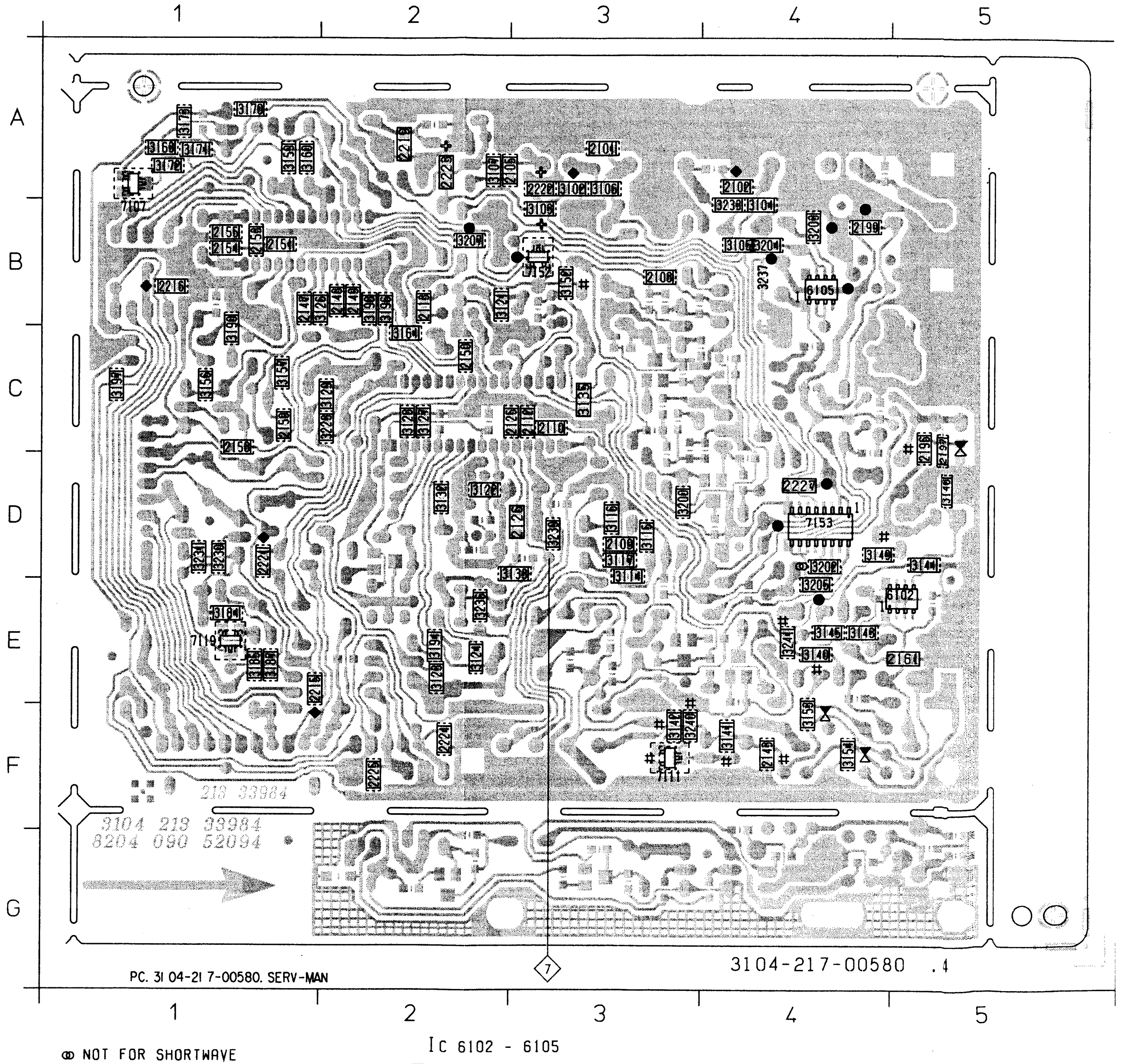
0004	B1	2116	E4	2142	D2	2201	B2	3138	E2	3225	B5	5112	B5	7104	E4	7150	D5	9117	C3	9137	F4
1101	A2	2117	D5	2144	E1	2210	B3	3147	D2	3244	C4	5113	D3	7105	B4	7157	D5	9119	E3	9138	B4
1110	B1	2118	D5	2145	C1	2211	C2	3150	F3	5101	A4	5114	E3	7106	A5	9100	E5	9120	B3	9139	D4
1111	E1	2119	D5	2146	C1	3100	B3	3151	D2	5103	B3	5122	C2	7108	C5	9101	D1	9122	C3	9140	D4
1112	F5	2120	D5	2152	B5	3101	B3	3155	C5	5104	B3	5123	B1	7109	C5	9104	C2	9123	F3	9141	E4
1117	F4	2121	C3	2156	B5	3108	A4	3158	C5	5105	D4	6101	C5	7110	F2	9106	E2	9124	D3	9142	E4
1120	C1	2123	C4	2160	C5	3113	B3	3162	C5	5106	E4	6109	E5	7112	D1	9108	E2	9125	B4	9144	E4
2103	B3	2124	D3	2162	D2	3118	D3	3165	B5	5107	F1	6121	A4	7113	E3	9109	C2	9128	C3	9146	D4
2104	B2	2129	D4	2163	E2	3120	E4	3166	B5	5108	C1	6122	A4	7114	F2	9111	B2	9130	B4	9147	F5
2107	B4	2131	C4	2165	E5	3125	C4	3167	B5	5109	F2	6123	A5	7115	E1	9113	D3	9132	C4	9149	E5
2114	E4	2140	F2	2198	B2	3131	D4	3183	E5	5110	B4	7101	A4	7116	D3	9115	E2	9133	A4	9150	E5
2115	E3	2141	E1	2200	B2	3134	D3	3186	E5	5111	D4	7103	C4	7120	E5	9116	D3	9134	C4		

TUNER UNIT 92 / component side view


1
2
3
4
5
A
B
C
D
E
F
G
TUNER
1101
4=⊥
5=Varicap
6=12.7V
20=5.5V
23=⊥
3=12.6V
18=FM=3.7V
AM=0V
23=⊥
14=AF-L
15=AF-R
7103
7105
5107
5109
13.8V
3104-217-00580 .4
PC. 31 04-21 7-00580. SERV-MAN

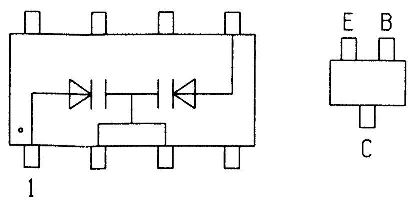
ꝏ NOT FOR SHORTWAVE
◆ ONLY FOR FTZ
● ONLY FOR SHORT WAVE
NOT FOR /17 AND /01
⧗ ONLY FOR /17 AND /01

2101	A3	2125	C3	2153	B1	2199	B4	2225	F2	3114	E3	3126	B2	3141	F4	3153	F4	3170	A1	3194	E2	3205	E4	3237	B4
2102	A4	2126	D3	2154	B1	2215	E2	2227	D4	3115	D3	3127	C2	3142	F3	3154	F4	3171	A1	3196	B2	3207	B2	3239	D3
2105	A3	2143	F4	2155	B1	2216	B1	3102	A3	3116	D3	3128	C2	3143	E4	3156	C1	3172	A1	3197	C1	3223	C2	3240	F3
2108	B3	2147	B1	2158	D1	2219	A2	3103	B3	3117	D3	3129	C2	3144	D5	3157	C1	3173	A1	3198	B2	3230	D1	3241	E4
2109	D3	2148	B2	2159	C1	2221	D1	3104	B4	3121	B2	3132	D2	3145	E4	3159	A1	3184	E1	3200	D3	3231	D1	6102	E5
2110	C3	2149	B2	2161	E5	2222	A3	3105	B4	3122	D2	3133	E3	3148	D5	3160	A1	3185	E1	3202	D4	3233	B4	6105	B4
2112	C3	2150	C2	2196	C5	2223	A2	3106	A3	3123	E2	3135	C3	3149	D4	3163	A1	3187	E1	3203	B4	3236	E2	7107	B1
2113	B2	2151	B1	2197	C5	2224	F2	3107	A2	3124	E2	3140	E4	3152	B3	3164	C2	3190	C1	3204	B4	3237	B4	7111	F3

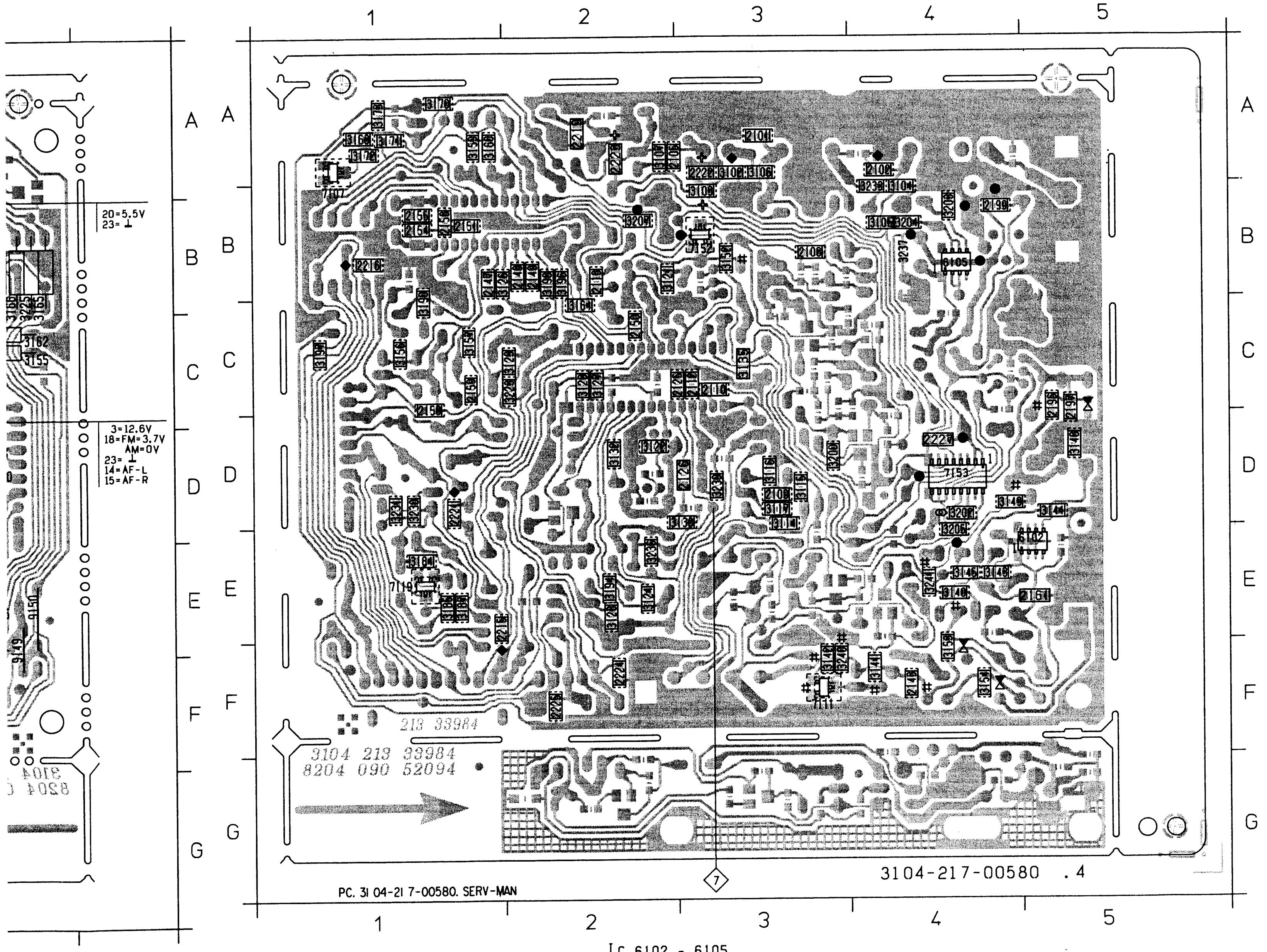

1
2
3
4
5
A
B
C
D
E
F
G
3104 213 33984
8204 090 52094
7153
6105
6102
3104-217-00580 .4
PC. 31 04-21 7-00580. SERV-MAN

ꝏ NOT FOR SHORTWAVE
◆ ONLY FOR FTZ
✣ NOT FOR FTZ
● ONLY FOR SHORT WAVE
NOT FOR /17 AND /01
⧗ ONLY FOR /17 AND /01

IC 6102 - 6105

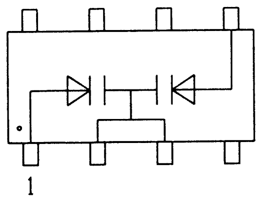


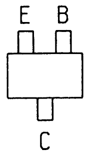
2101	A3
2102	A4
2105	A3
2108	B3
2109	D3
2110	C3
2112	C3
2113	B2
2125	C3
2126	D3
2143	F4
2147	B1
2148	B2
2149	B2
2150	C2
2151	B1
2153	B1
2154	B1
2155	B1
2158	D1
2159	C1
2161	E5
2196	C5
2197	C5
2199	B4
2215	E2
2216	B1
2219	A2
2221	D1
2222	A3
2223	A2
2224	F2
2225	F2
2227	D4
3102	A3
3103	B3
3104	B4
3105	B4
3106	A3
3107	A2
3114	E3
3115	D3
3116	D3
3117	D3
3121	B2
3122	D2
3123	E2
3124	E2
3126	B2
3127	C2
3128	C2
3129	C2
3132	D2
3133	E3
3135	C3
3140	E4
3141	F4
3142	F3
3143	E4
3144	D5
3145	E4
3148	D5
3149	D4
3152	B3
3153	F4
3154	F4
3156	C1
3157	C1
3159	A1
3160	A1
3163	A1
3164	C2
3170	A1
3171	A1
3172	A1
3173	A1
3184	E1
3185	E1
3187	E1
3190	C1
3194	E2
3196	B2
3197	C1
3198	B2
3200	D3
3202	D4
3203	B4
3204	B4
3205	E4
3207	B2
3223	C2
3230	D1
3231	D1
3233	B4
3236	E2
3237	B4
3237	B4
3239	D3
3240	F3
3241	E4
6102	E5
6105	B4
7107	B1
7111	F3
7119	E1
7152	B3
7153	D4



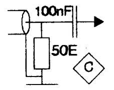
- ꝏ NOT FOR SHORTWAVE
- ◆ ONLY FOR FTZ
- ✣ NOT FOR FTZ
- ● ONLY FOR SHORT WAVE
- # NOT FOR /17 AND /01
- ⧗ ONLY FOR /17 AND /01

Ic 6102 - 6105



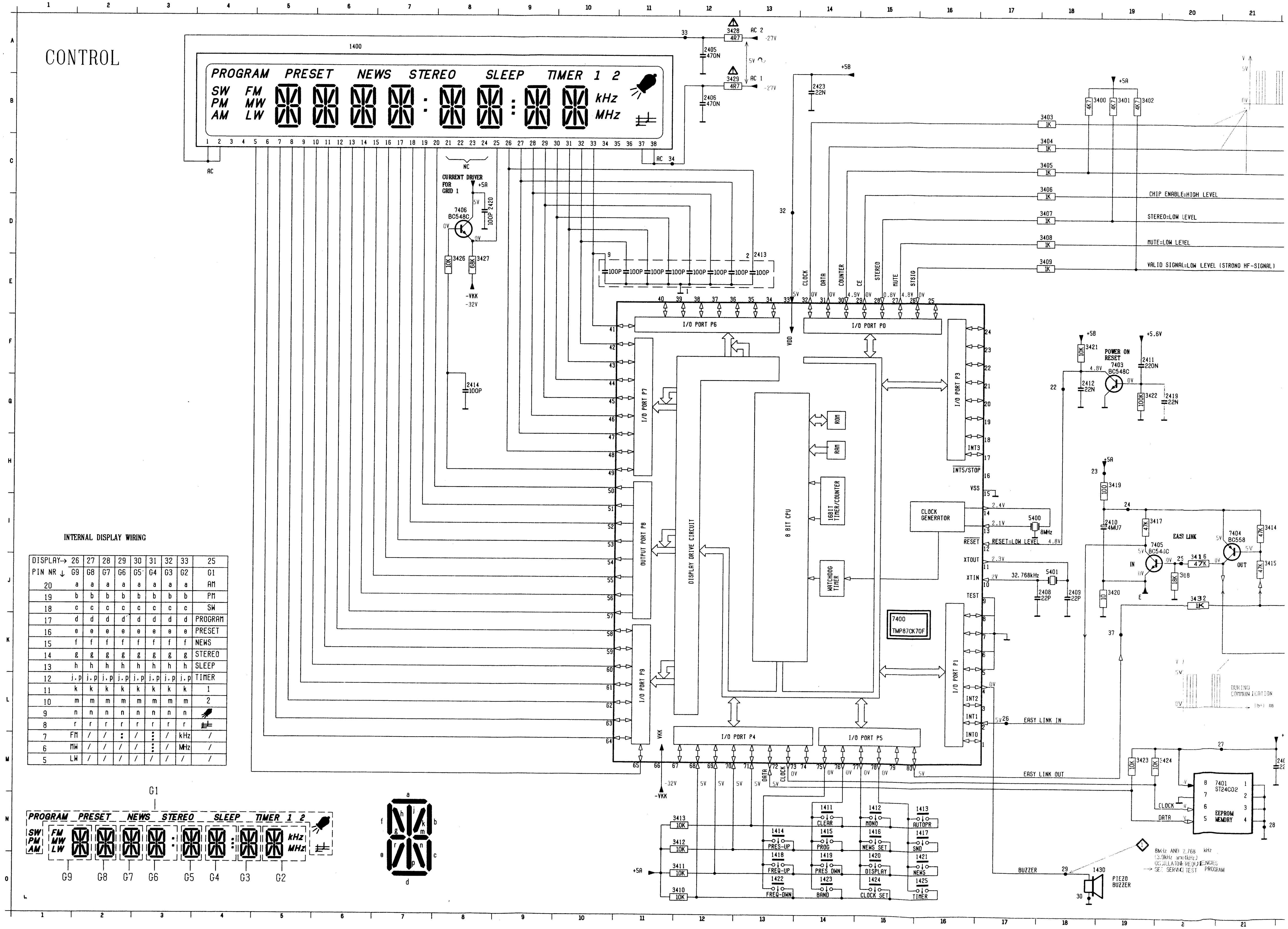


TUNER 92 Adjustment table (FM, MW - and FM, MW, LW - versions with AM frame antenna)

Waverange	Input frequency	Input	Set tuned to	Adjust	Output	Scope / Voltmeter
VARICAP ALIGNMENT						
FM			108 MHz	check	6	7....9V
87.5 - 108MHz			87.5MHz	check		1.3....2V
AM 2-band version, 10kHz grid			1710kHz	5108		8.5V ± 0.1V
530 - 1710kHz			530kHz	check		1V ± 0.3V
LW			279kHz	5108		8.5V ± 0.1V
153 - 279kHz			153kHz	check		1V ± 0.1V
MW			1611kHz	2142		8.5V ± 0.1V
522 - 1611kHz			522kHz	check		1.1V ± 0.3V
FM IF						
FM	98 MHz, 1mV mod = 1kHz Δf = 75kHz	A	98MHz	5105	1 2	0V ± 20mV
STEREO CROSSTALK						
FM	98 MHz, 1mV 90% Left +9% pilot	A	98MHz	check	3	low < 1 V
				3131	4	Right channel minimum
SEARCH SENSITIVITY						
FM	98 MHz, 15μV mod = 1kHz Δf = 75kHz	A	98MHz	3125	5	Switches just from High to Low
AM - IF						
MW	1494kHz Δf = 10kHz as low as possible	 100nF 50E C	1494kHz	5104	7	symmetrical and max height
AM RF[1]						
AM 2-band version, 10kHz grid	560kHz	B	560kHz	5107	7	MAX. ↕
m=30%, 1kHz	1600kHz		1600kHz	2141		
LW	155kHz		155kHz	5109		
m=30%, 1kHZ	270kHz		270kHz	2140		
MW	558kHz		558kHz	5107		
m=30%, 1kHz	1494kHz		1494kHz	2141		

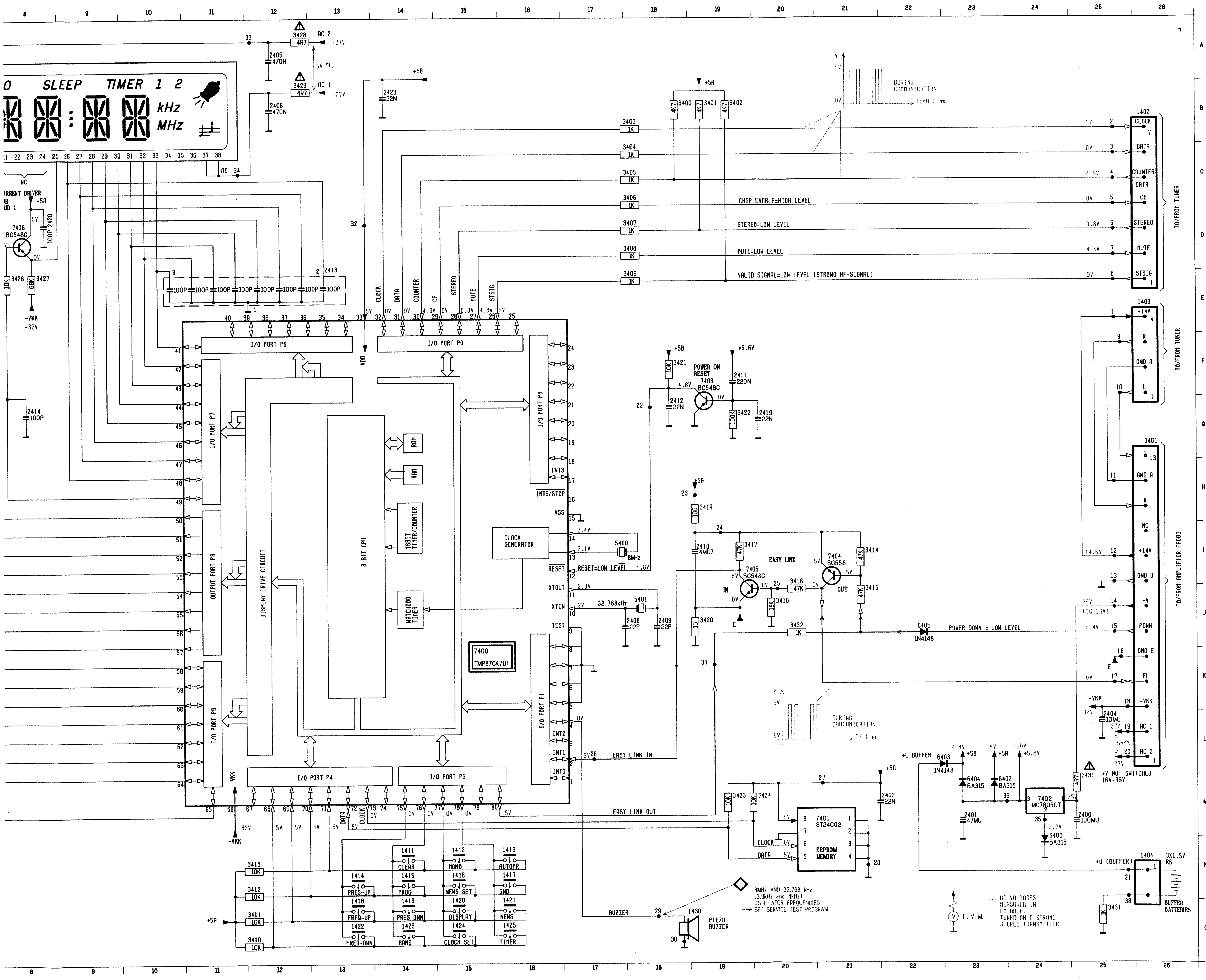
[1] For AM RF-adjustments the original frame antenna 4822 158 60622 has to be used!

↕ repeat

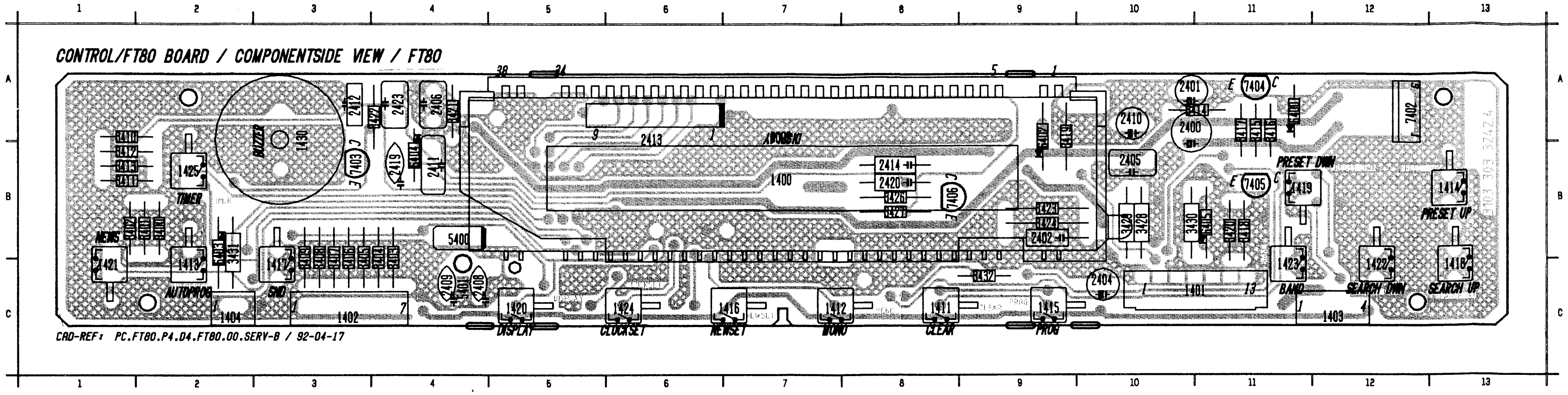

CONTROL
1400
PROGRAM PRESET NEWS STEREO SLEEP TIMER 1 2
SW FM
PM MW
AM LW
kHz
MHz
NC
AC
CURRENT DRIVER FOR GRID 1
7406 BC548C
2420 100P
3426 10K
3427 68K
-VKK -32V
2414 100P
2413
3428 4R7
3429 4R7
2405 470N
2406 470N
AC 2 -27V
AC 1 -27V
2423 22N
+5B
+5A
3400 4K7
3401 4K7
3402 4K7
3403 1K
3404 1K
3405 1K
3406 1K
3407 1K
3408 1K
3409 1K
CHIP ENABLE=HIGH LEVEL
STEREO=LOW LEVEL
MUTE=LOW LEVEL
VALID SIGNAL=LOW LEVEL (STRONG HF-SIGNAL)
CLOCK
DATA
COUNTER
CE
STEREO
MUTE
STSIG
VDD
I/O PORT P6
I/O PORT P0
I/O PORT P7
I/O PORT P3
OUTPUT PORT P8
I/O PORT P9
DISPLAY DRIVE CIRCUIT
8 BIT CPU
ROM
RAM
16BIT TIMER/COUNTER
WATCHDOG TIMER
CLOCK GENERATOR
I/O PORT P4
I/O PORT P5
I/O PORT P1
7400 TMP87CK70F
INT3
INT5/STOP
VSS
RESET
RESET=LOW LEVEL
XTOUT
XTIN
TEST
INT2
INT1
INT0
5400 8MHz
5401 32.768kHz
2408 22P
2409 22P
POWER ON RESET
7403 BC548C
3421 10K
2411 220N
2412 22N
3422 100K
2419 22N
+5.6V
3419 100
2410 4MU7
3417 47K
7405 BC548C
7404 BC558
EASY LINK
3416 47K
3418 18K
3420 10
3414 47K
3415 47K
3432 1K
IN
OUT
EASY LINK IN
EASY LINK OUT
DURING COMMUNICATION
3423 10K
3424 10K
7401 ST24C02
EEPROM MEMORY
CLOCK
DATA
BUZZER
1430 PIEZO BUZZER
8MHz AND 32.768 kHz OSCILLATOR FREQUENCIES → SEE SERVICE TEST PROGRAM
3413 10K
3412 10K
3411 10K
3410 10K
1411 CLEAR
1412 MONO
1413 AUTOPR
1414 PRES-UP
1415 PROG
1416 NEWS SET
1417 SND
1418 FREQ-UP
1419 PRES DOWN
1420 DISPLAY
1421 NEWS
1422 FREQ-DOWN
1423 BAND
1424 CLOCK SET
1425 TIMER
G1
G9 G8 G7 G6 G5 G4 G3 G2
a b c d e f g h j k m n p r

INTERNAL DISPLAY WIRING

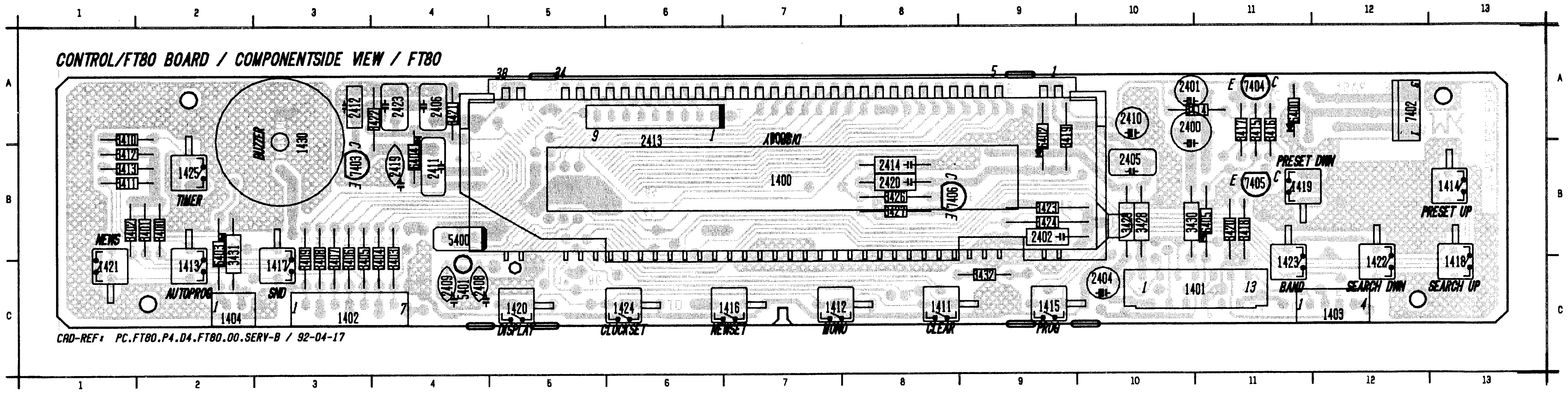
DISPLAY→	26	27	28	29	30	31	32	33	25
PIN NR ↓	G9	G8	G7	G6	G5	G4	G3	G2	G1
20	a	a	a	a	a	a	a	a	AM
19	b	b	b	b	b	b	b	b	PM
18	c	c	c	c	c	c	c	c	SW
17	d	d	d	d	d	d	d	d	PROGRAM
16	e	e	e	e	e	e	e	e	PRESET
15	f	f	f	f	f	f	f	f	NEWS
14	g	g	g	g	g	g	g	g	STEREO
13	h	h	h	h	h	h	h	h	SLEEP
12	j.p	j.p	j.p	j.p	j.p	j.p	j.p	j.p	TIMER
11	k	k	k	k	k	k	k	k	1
10	m	m	m	m	m	m	m	m	2
9	n	n	n	n	n	n	n	n	🔔
8	r	r	r	r	r	r	r	r	⧣
7	FM	/	/	:	/	⋮	/	kHz	/
6	MW	/	/	/	/	⋮	/	MHz	/
5	LW	/	/	/	/	/	/	/	/


SLEEP TIMER 1 2
kHz
MHz
I/O PORT P6
I/O PORT P0
I/O PORT P3
I/O PORT P7
OUTPUT PORT P8
I/O PORT P9
I/O PORT P1
I/O PORT P4
I/O PORT P5
DISPLAY DRIVE CIRCUIT
8 BIT CPU
ROM
RAM
16BIT TIMER/COUNTER
WATCHDOG TIMER
CLOCK GENERATOR
7400
TMP87CK70F
CLOCK
DATA
COUNTER
CE
STEREO
MUTE
STSIG
CHIP ENABLE=HIGH LEVEL
STEREO=LOW LEVEL
MUTE=LOW LEVEL
VALID SIGNAL=LOW LEVEL (STRONG HF-SIGNAL)
DURING COMMUNICATION
TB=0.2 ms
TB=1 ms
POWER ON RESET
RESET=LOW LEVEL
EASY LINK
EASY LINK IN
EASY LINK OUT
POWER DOWN = LOW LEVEL
+U BUFFER
+V NOT SWITCHED 16V-36V
7401 ST24C02 EEPROM MEMORY
7402 MC7805CT
BUFFER BATTERIES
3X1.5V R6
PIEZO BUZZER
BUZZER
8MHz AND 32.768 kHz (3.9kHz and 4kHz) OSCILLATOR FREQUENCIES → SEE SERVICE TEST PROGRAM
... DC VOLTAGES MEASURED IN FM MODE, TUNED ON A STRONG STEREO TRANSMITTER
E. V. M.
TO/FROM TUNER
TO/FROM TUNER
TO/FROM AMPLIFIER FA080
CLEAR
MONO
AUTOPR
PRES-UP
PROG
NEWS SET
SND
FREQ-UP
PRES DWN
DISPLAY
NEWS
FREQ-DWN
BAND
CLOCK SET
TIMER

1400	A 6
1401	G26
1402	B26
1403	E26
1404	N26
1411	N14
1412	N15
1413	N15
1414	N13
1415	N14
1416	N15
1417	N15
1418	N13
1419	N14
1420	N15
1421	N15
1422	O13
1423	O14
1424	O15
1425	O15
1430	O19
2400	M25
2401	M23
2402	M21
2404	L25
2405	A12
2406	B12
2408	J17
2409	J18
2410	I19
2411	F19
2412	G18
2413	D13
2414	G 8
2419	G20
2420	D 8
2423	B14
3400	B18
3401	B19
3402	B19
3403	B18
3404	C18
3405	C18
3406	C18
3407	D18
3408	D18
3409	E18
3410	O12
3411	O12
3412	N12
3413	N12
3414	I21
3415	J21
3416	I20
3417	I19
3418	J20
3419	H19
3420	J19
3421	F18
3422	G19
3423	M19
3424	M19
3426	E 8
3427	E 8
3428	A12
3429	B12
3430	M25
3431	O25
3432	J20
5400	I17
5401	J18
6400	N24
6402	M23
6403	L23
6404	M23
6405	J22
7400	K15
7401	M20
7402	M24
7403	F19
7404	I21
7405	I20
7406	D 8

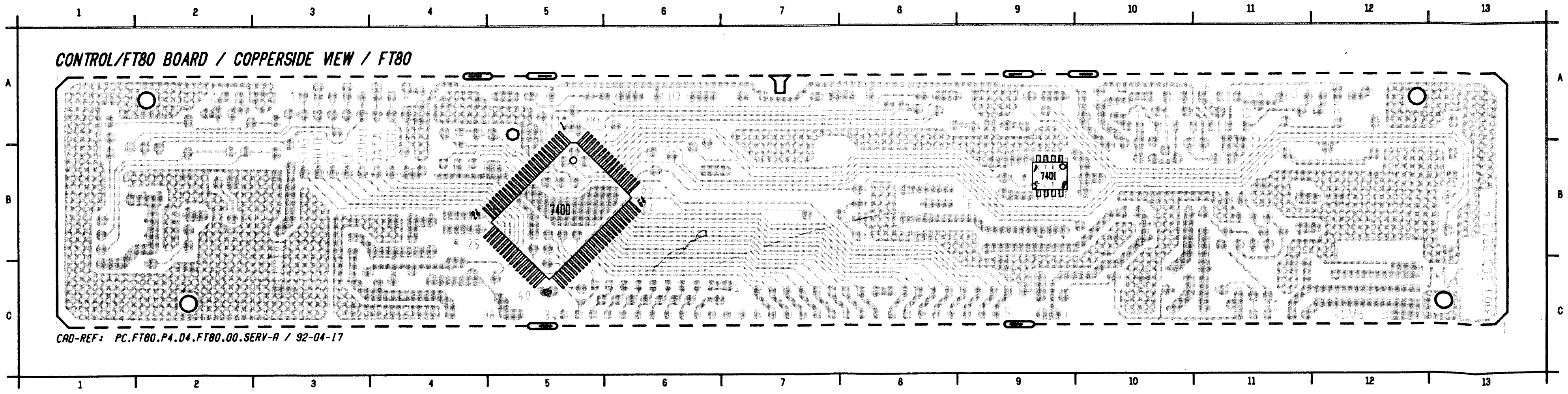

CONTROL/FT80 BOARD / COMPONENTSIDE VIEW / FT80
CAD-REF: PC.FT80.P4.D4.FT80.00.SERV-B / 92-04-17
BUZZER
TIMER
NEWS
AUTOPROG
SND
DISPLAY
CLOCKSET
NEWSET
MONO
CLEAR
PROG
BAND
SEARCH DWN
SEARCH UP
PRESET UP
PRESET DWN
1400
1401
1402
1403
1404
5400

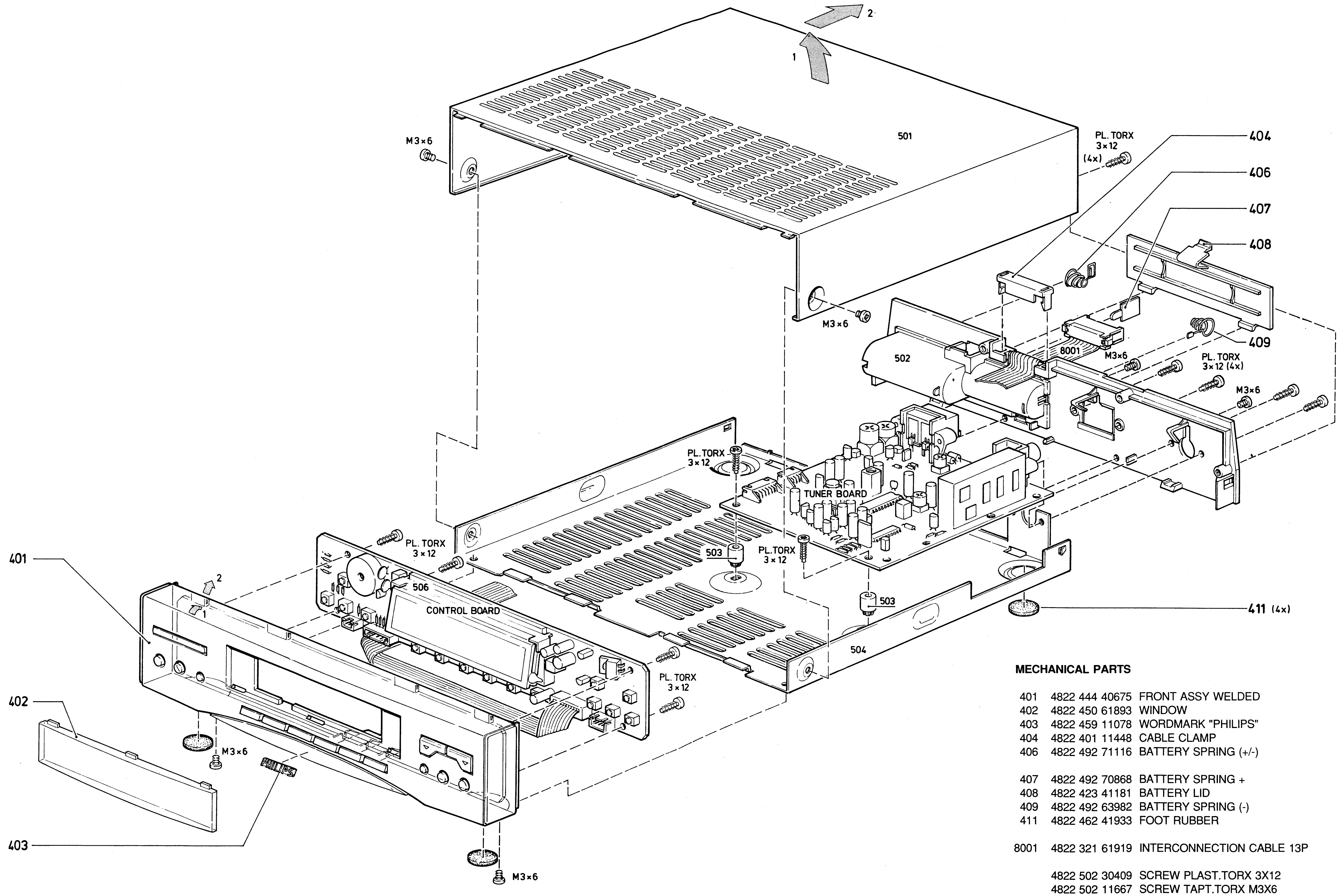
0002	A 7
1400	B 7
1401	C11
1402	C 3
1403	C12
1404	C 2
1411	C 8
1412	C 7
1413	C 2
1414	B13
1415	C 9
1416	C 7
1417	C 3
1418	C13
1419	B11
1420	C 5
1421	C 1
1422	C12
1423	C11
1424	C 6
1425	B 2
1430	A 3
2400	A10
2401	A10
2402	B 9
2404	C10
2405	B10
2406	A 4
2408	C 4
2409	C 4
2410	A10
2411	B 4
2412	A 3
2413	A 6
2414	B 8
2419	B 4
2420	B 8
2423	A 4
3400	B 2
3401	B 2
3402	B 1
3403	B 4
3404	B 4
3405	B 3
3406	B 3
3407	B 3
3408	B 3
3409	B 3
3410	A 1
3411	B 1
3412	B 1
3413	B 1
3414	A11
3415	A11
3416	A11
3417	A11
3418	B11
3419	A 9
3420	B11
3421	A 4
3422	A 4
3423	B 9
3424	B 9
3426	B 8
3427	B 8
3428	B10
3429	B10
3430	B10
3431	B 2
3432	C 9
5400	B 4
5401	C 4
6400	A11
6402	A 9
6403	B 2
6404	B 4
6405	B11
7402	A12
7403	B 3
7404	A11
7405	B11
7406	B 8


CONTROL/FT80 BOARD / COMPONENTSIDE VIEW / FT80
CAD-REF: PC.FT80.P4.D4.FT80.00.SERV-B / 92-04-17
BUZZER
TIMER
NEWS
AUTOPROG
SND
DISPLAY
CLOCKSET
NEWSET
MONO
CLEAR
PROG
BAND
SEARCH DWN
SEARCH UP
PRESET UP
PRESET DWN

0002	A 7
1400	B 7
1401	C11
1402	C 3
1403	C12
1404	C 2
1411	C 8
1412	C 7
1413	C 2
1414	B13
1415	C 9
1416	C 7
1417	C 3
1418	C13
1419	B11
1420	C 5
1421	C 1
1422	C12
1423	C11
1424	C 6
1425	B 2
1430	A 3
2400	A10
2401	A10
2402	B 9
2404	C10
2405	B10
2406	A 4
2408	C 4
2409	C 4
2410	A10
2411	B 4
2412	A 3
2413	A 6
2414	B 8
2419	B 4
2420	B 8
2423	A 4
3400	B 2
3401	B 2
3402	B 1
3403	B 4
3404	B 4
3405	B 3
3406	B 3
3407	B 3
3408	B 3
3409	B 3
3410	A 1
3411	B 1
3412	B 1
3413	B 1
3414	A11
3415	A11
3416	A11
3417	A11
3418	B11
3419	A 9
3420	B11
3421	A 4
3422	A 4
3423	B 9
3424	B 9
3426	B 8
3427	B 8
3428	B10
3429	B10
3430	B10
3431	B 2
3432	C 9
5400	B 4
5401	C 4
6400	A11
6402	A 9
6403	B 2
6404	B 4
6405	B11
7402	A12
7403	B 3
7404	A11
7405	B11
7406	B 8

7400	B 5
7401	B 9


CONTROL/FT80 BOARD / COPPERSIDE VIEW / FT80
CAD-REF: PC.FT80.P4.D4.FT80.00.SERV-A / 92-04-17
7400
7401


2
1
501
M3×6
PL. TORX
3×12
(4x)
404
406
407
408
409
M3×6
502
8001
M3×6
PL. TORX
3×12 (4x)
M3×6
PL. TORX
3×12
TUNER BOARD
503
PL. TORX
3×12
503
411 (4x)
504
401
PL. TORX
3×12
506
CONTROL BOARD
2
1
PL. TORX
3×12
402
M3×6
PHILIPS
403
M3×6

MECHANICAL PARTS

401	4822 444 40675	FRONT ASSY WELDED
402	4822 450 61893	WINDOW
403	4822 459 11078	WORDMARK "PHILIPS"
404	4822 401 11448	CABLE CLAMP
406	4822 492 71116	BATTERY SPRING (+/-)
407	4822 492 70868	BATTERY SPRING +
408	4822 423 41181	BATTERY LID
409	4822 492 63982	BATTERY SPRING (-)
411	4822 462 41933	FOOT RUBBER
8001	4822 321 61919	INTERCONNECTION CABLE 13P
	4822 502 30409	SCREW PLAST.TORX 3X12
	4822 502 11667	SCREW TAPT.TORX M3X6

ELECTRICAL PARTSLIST

CONTROL BOARD

MISCELLANEOUS

1400	4822 130 91122	FTD 9BT-107GK-B
1411	4822 276 13114	TACT SWITCH
1412	4822 276 13114	TACT SWITCH
1413	4822 276 13114	TACT SWITCH
1414	4822 276 13114	TACT SWITCH
1415	4822 276 13114	TACT SWITCH
1416	4822 276 13114	TACT SWITCH
1417	4822 276 13114	TACT SWITCH
1418	4822 276 13114	TACT SWITCH
1419	4822 276 13114	TACT SWITCH
1420	4822 276 13114	TACT SWITCH
1421	4822 276 13114	TACT SWITCH
1422	4822 276 13114	TACT SWITCH
1423	4822 276 13114	TACT SWITCH
1424	4822 276 13114	TACT SWITCH
1425	4822 276 13114	TACT SWITCH
1430	4822 280 10261	PIEZO BUZZER

DIODES

6400	4822 130 30843	BA315
6402	4822 130 30843	BA315
6403	4822 130 30621	1N4148
6404	4822 130 30843	BA315
6405	4822 130 30621	1N4148

TRANSISTORS

7403	4822 130 44196	BC548C
7404	4822 130 40941	BC558
7405	4822 130 44196	BC548C
7406	4822 130 44196	BC548C

INTEGRATED CIRCUITS

7400	4822 209 32543	TMP87CK70AF-6079
7401	5322 209 63719	ST24C02A, EEPROM
7402	4822 209 80891	MC7805CT, VOLTAGE REGULATOR

COILS

5400	5322 242 73697	CERAM.RES. 8MHz
5401	4822 242 81016	X-TAL 32,768kHz

RESISTORS

3400	4822 116 52283	4k7	5%	0,5W
3401	4822 116 52283	4k7	5%	0,5W
3402	4822 116 52283	4k7	5%	0,5W
3403	4822 050 11002	1k	5%	0,2W
3404	4822 050 11002	1k	5%	0,2W
3405	4822 050 11002	1k	5%	0,2W
3406	4822 050 11002	1k	5%	0,2W
3407	4822 050 11002	1k	5%	0,2W
3408	4822 050 11002	1k	5%	0,2W
3409	4822 050 11002	1k	5%	0,2W
3410	4822 116 52233	10k	5%	0,5W
3411	4822 116 52233	10k	5%	0,5W
3412	4822 116 52233	10k	5%	0,5W
3413	4822 116 52233	10k	5%	0,5W
3414	4822 116 52284	47k	5%	0,5W
3415	4822 116 52284	47k	5%	0,5W
3416	4822 116 52284	47k	5%	0,5W
3417	4822 116 52284	47k	5%	0,5W
3418	4822 116 52251	18k	5%	0,5W
3419	4822 116 52175	100R	5%	0,5W
3420	4822 116 52176	10R	5%	0,5W
3421	4822 116 52233	10k	5%	0,5W
3422	4822 116 52234	100k	5%	0,5W
3423	4822 116 52233	10k	5%	0,5W
3424	4822 116 52233	10k	5%	0,5W
3426	4822 116 52233	10k	5%	0,5W
3427	4822 116 52297	68k	5%	0,5W
3428	4822 052 10478	4R7	5%	NFR
3429	4822 052 10478	4R7	5%	NFR
3430	4822 052 10478	4R7	5%	NFR
3431	4822 050 11002	1k	5%	0,2W
3432	4822 050 11002	1k	5%	0,2W

CAPACITORS

2400	4822 124 41525	100µF	20%	25V
2401	4822 124 40433	47µF	20%	25V
2402	4822 126 11585	22nF		50V
2403	4822 126 11585	22nF		50V
2404	4822 124 40435	10µF	20%	50V
2405	4822 121 51252	470nF	5%	63V
2406	4822 121 51252	470nF	5%	63V
2408	4822 126 12187	22pF	5%	50V
2409	4822 126 12187	22pF	5%	50V
2410	4822 124 40246	4,7µF	20%	63V
2411	4822 121 42408	220nF	5%	63V
2412	4822 126 12147	22nF	10%	25V
2413	4822 122 90099	CAP NETWORK 8x100pF		
2414	4822 122 33195	100pF	10%	50V
2419	4822 126 12147	22nF	10%	25V
2420	4822 122 33195	100pF	10%	50V
2422	4822 126 11585	22nF		50V
2423	4822 126 12147	22nF	10%	25V
2424	4822 122 33195	100pF	10%	50V
2425	4822 122 33195	100pF	10%	50V
2426	4822 126 11585	22nF		50V

TUNER BOARD

MISCELLANEOUS

	4822 158 60622	AM FRAME AERIAL
1101	4822 210 10491	FRONTEND ASSY /00/01
1101	4822 210 10492	FRONTEND ASSY /02
1110	4822 267 10283	SOCKET COAX IEC 75R
1111	4822 267 31505	SOCKET 2P CLICKFIT

DIODES

6101	4822 130 34174	BZX79-C4V7
6102	4822 130 83075	HN1V02H, VARICAP
6109	4822 130 30621	1N4148
6122	4822 130 30621	1N4148

TRANSISTORS

7101	4822 130 60163	2SC1047
7104	5322 130 60068	BC558C
7106	5322 130 60068	BC558C
7107	5322 130 41982	BC848 (CHIP)
7108	4822 130 44196	BC548C
7109	4822 130 44196	BC548C
7110	5322 130 44779	BC338-40
7111	5322 130 41982	BC848 (CHIP)
7112	4822 130 60163	2SC1047
7113	4822 130 44196	BC548C
7114	5322 130 44779	BC338-40
7115	4822 130 41024	BF245B
7116	4822 130 60163	2SC1047
7119	5322 130 41983	BC858B(CHIP)
7120	4822 130 44196	BC548C
7150	5322 130 44779	BC338-40
7157	5322 130 44779	BC338-40

INTEGRATED CIRCUITS

7103	4822 209 31001	LA1851N, Radio IC
7105	4822 209 30178	LC7218, Synthesizer IC

COILS

5101	4822 157 53192	0,22µH
5103	4822 242 81249	CERAM. FILTER 10,7MHz
5104	4822 157 63029	AM IF COIL
5105	4822 157 63904	Q-DETECTION COIL
5106	4822 157 63802	BIRDY FILTER
5107	4822 157 63799	ANT. COIL MW 3-BAND
5107	4822 157 63835	ANT. COIL MW 2-BAND
5108	4822 157 63912	OSC.COIL AM 3-BAND
5108	4822 157 63836	OSC.COIL AM 2-BAND
5109	4822 157 63801	AERIAL COIL LW
5110	4822 242 71878	CERAM. FILTER 450kHz
5111	4822 242 81248	CERAM. RESONATOR 19kHz
5112	4822 242 72976	CERAM. RESONATOR 7,2MHz
5113	4822 242 81249	CERAM. FILTER 10,7MHz
5114	4822 152 20699	560µH

RESISTORS

3100	4822 050 21501	150R	1%	0,6W
3101	4822 050 21501	150R	1%	0,6W
3108	4822 050 24701	470R	5%	0,5W
3113	4822 053 10221	220R	5%	1W
3118	4822 116 52215	220R	5%	0,16W
3120	4822 052 10339	33R	5%	NFR
3125	4822 100 11213	22k	30%	POT.
3131	4822 100 11319	4k7 trimpot.		
3134	4822 050 15602	5k6	1%	0,4W

RESISTORS

3138	4822 116 83922	150R	5%	1W
3147	4822 050 15602	5k6	1%	0,4W
3150	4822 050 25601	560R	1%	0,6W
3151	4822 050 24702	4k7	1%	0,6W
3155	4822 050 22201	220R	2%	0,25W
3158	4822 050 24702	4k7	1%	0,6W
3162	4822 050 23901	390R	1%	0,6W
3165	4822 050 21002	1k	1%	0,6W
3166	4822 050 21002	1k	1%	0,6W
3167	4822 050 21002	1k	1%	0,6W
3183	4822 050 21003	10k	2%	0,25W
3186	4822 050 21003	10k	2%	0,25W
3225	4822 050 21002	1k	1%	0,6W
3244	5322 116 44005	PTC	250R	25%

CHIP RESISTORS

3102	4822 051 20224	220k	5%	0,1W
3103	4822 051 20008	CHIP JUMPER 0805		
3104	4822 051 20008	CHIP JUMPER 0805		
3104	4822 051 20154	150k	5%	0,1W
3105	4822 051 20562	5k6	5%	0,1W
3106	4822 051 20829	82R	5%	0,1W
3107	4822 051 20104	100k	5%	0,1W
3114	4822 051 20472	4k7	5%	0,1W
3115	4822 051 20391	390R	5%	0,1W
3116	4822 051 20478	4R7	5%	0,1W
3117	4822 051 20331	330R	5%	0,1W
3121	4822 051 20272	2k7	5%	0,1W
3122	4822 051 20562	5k6	5%	0,1W
3123	4822 051 20223	22k	5%	0,1W
3124	4822 051 20103	10k	5%	0,1W
3126	4822 051 20123	12k	2%	0,1W
3127	4822 051 20562	5k6	5%	0,1W
3128	4822 051 20562	5k6	5%	0,1W
3129	4822 051 20103	10k	5%	0,1W
3132	4822 051 20183	18k	5%	0,1W
3133	4822 051 20008	CHIP JUMPER 0805		
3135	4822 051 10008	CHIP JUMPER 1206		
3140	4822 051 20821	820R	5%	0,1W
3141	4822 051 20182	1k8	5%	0,1W
3142	4822 051 20472	4k7	5%	0,1W
3143	4822 051 20821	820R	5%	0,1W
3144	4822 051 20331	330R	5%	0,1W
3145	4822 051 20271	270R	5%	0,1W
3148	4822 051 20104	100k	5%	0,1W
3149	4822 051 20472	4k7	5%	0,1W
3152	4822 051 20103	10k	5%	0,1W
3153	4822 051 20008	CHIP JUMPER 0805		
3154	4822 051 20008	CHIP JUMPER 0805		
3156	4822 051 20153	15k	5%	0,1W
3157	4822 051 20472	4k7	5%	0,1W
3159	4822 051 20104	100k	5%	0,1W
3160	4822 051 20104	100k	5%	0,1W
3163	4822 051 20103	10k	5%	0,1W
3164	4822 051 20473	47k	5%	0,1W
3170	4822 051 20223	22k	5%	0,1W
3171	4822 051 20103	10k	5%	0,1W
3172	4822 051 20472	4k7	5%	0,1W
3173	4822 051 20223	22k	5%	0,1W
3184	4822 051 20332	3k3	5%	0,1W
3185	4822 051 20103	10k	5%	0,1W
3187	4822 051 20103	10k	5%	0,1W
3190	4822 051 20479	47R	5%	0,1W
3194	4822 051 20472	4k7	5%	0,1W

CHIP RESISTORS

3196	4822 051 20008	CHIP JUMPER 0805		
3197	4822 051 20008	CHIP JUMPER 0805		
3198	4822 051 20103	10k	5%	0,1W
3200	4822 051 20008	CHIP JUMPER 0805		
3202	4822 051 20008	CHIP JUMPER 0805		
3223	4822 051 20474	470k	5%	0,1W
3230	4822 051 20223	22k	5%	0,1W
3231	4822 051 20223	22k	5%	0,1W
3233	4822 051 10102	1k	2%	0,25W
3236	4822 051 20008	CHIP JUMPER 0805		
3240	4822 051 20182	1k8	5%	0,1W
3241	4822 051 20008	CHIP JUMPER 0805		

CAPACITORS

2103	4822 124 40433	47µF	20%	25V
2104	4822 121 42408	220nF	5%	63V
2107	4822 122 10225	82pF	5%	50V
2107	4822 122 31385	22pF	5%	50V
2114	5322 124 41431	22µF	20%	25V
2115	4822 124 40239	0,47µF	20%	63V
2116	5322 121 42386	100nF	5%	63V
2117	4822 121 41935	12nF	5%	250V
2118	4822 121 41935	12nF	5%	250V
2119	4822 124 40244	2,2µF	20%	63V
2120	4822 124 40244	2,2µF	20%	63V
2121	4822 124 40196	220µF	20%	16V
2123	4822 124 40246	4,7µF	20%	63V
2124	4822 124 40246	4,7µF	20%	63V
2129	4822 124 40242	1µF	20%	63V
2131	4822 124 40435	10µF	20%	50V
2140	4822 125 60102	30pF	VARIABLE	
2141	4822 125 60101	10pF	VARIABLE	
2142	4822 125 60102	30pF	VARIABLE	
2144	4822 121 42408	220nF	5%	63V
2145	4822 121 51263	510pF	1%	400V
2145	4822 121 51381	560pF	1%	400V
2146	4822 121 70082	430pF	1%	400V
2152	4822 124 40242	1µF	20%	63V
2156	4822 124 40433	47µF	20%	25V
2160	4822 124 41631	1,5µF	20%	50V
2162	4822 122 10166	22nF	30%	16V
2165	4822 124 40433	47µF	20%	25V
2210	4822 124 41643	100µF	20%	16V

CHIP CAPACITORS

2101	5322 122 34099	470pF	10%	63V
2102	5322 122 32268	470pF	10%	50V
2105	5322 122 32287	4,7pF	5%	50V
2105	5322 122 32965	18pF	5%	50V
2108	5322 122 32654	22nF	10%	63V
2109	5322 122 32654	22nF	10%	63V
2110	5322 122 32654	22nF	10%	63V
2112	5322 122 32654	22nF	10%	63V
2113	5322 122 32661	56pF	5%	50V
2125	4822 122 33177	10nF	20%	50V
2126	4822 122 31782	15nF	10%	50V
2143	5322 122 32269	6,8pF	5%	50V
2147	5322 122 32654	22nF	10%	63V
2148	5322 122 32452	47pF	5%	50V
2149	4822 122 33177	10nF	20%	50V
2150	5322 122 32654	22nF	10%	63V
2151	5322 122 34099	470pF	10%	63V
2153	5322 122 34099	470pF	10%	63V
2154	5322 122 32481	15pF	5%	50V

CHIP CAPACITORS

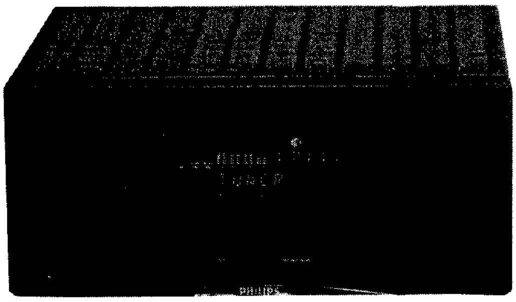
2155	5322 122 32965	18pF	5%	50V
2158	5322 126 10223	4,7nF	10%	63V
2159	5322 126 10223	4,7nF	10%	63V
2161	4822 122 32927	220nF	10%	63V
2196	5322 122 32448	10pF	5%	50V
2197	4822 122 33804	27pF	N750	50V
2215	5322 122 32268	470pF	10%	50V
2216	5322 122 32268	470pF	10%	50V
2219	4822 122 32927	220nF	10%	63V
2221	5322 122 32268	470pF	10%	50V
2222	5322 122 32268	470pF	10%	50V
2223	4822 122 32927	220nF	10%	63V
2224	4822 122 31173	220pF	10%	500V
2225	4822 122 31173	220pF	10%	500V

4751

Ampifier 70FA091

/01X/00U/02U/05U

Service
Service
Service



Service Manual

CONTENTS	PAGE
Specifcations	2
Controls & Connections	3
Dismantling of Source Selector	4
Dismantling of Front	4-5
Dismantling of Power PCB	6-7-8
Service Test Program	9-10
Electrical Adjustments	11
Grid assigment	12
Servicing hints and warnings	13
Trafo diagram	14
Wiring diagram	15-16
Spectrum analiser diagram	17-18
Front PCB	19-20
Front diagram	21-22-23
DSP digram	24
Source selector diagram	25-26
Source selector PCB	27-28-29-30
Equaliser and volume diagram	31-32
Micro-Mix diagram	33
Trafo assy diagram	33
Power unit diagram	34-35-36
Power unit PCB	37-38-39
Exploded view	40-41
List of mechanical parts	42
List of electrical parts	43-44-45-46-47-48-49-50-51

Published by Consumer Electronics   Printed in The Netherlands   ©Copyright reserved Subject to modification

4822 725 23957

PHILIPS

PCS 57 982

4751

SPECIFICATION

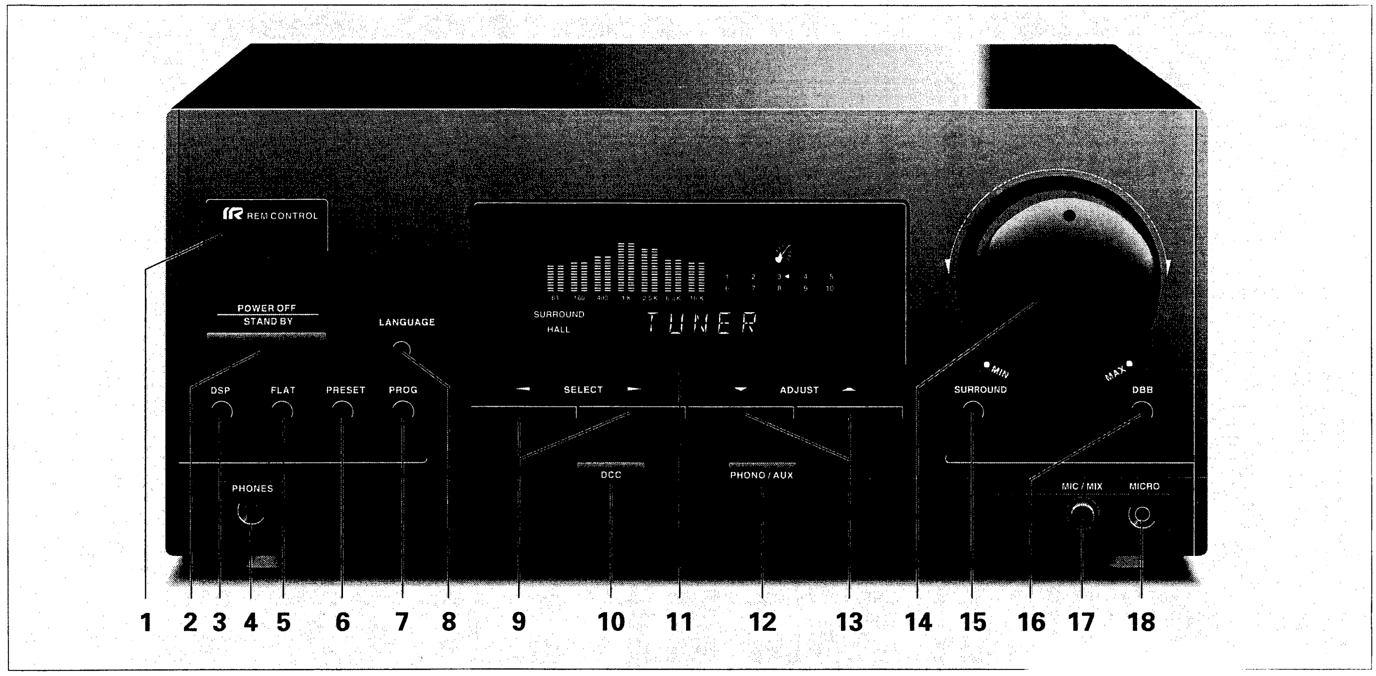
General:

Mains voltage	:230V ±10% 50Hz for/00/02
	:240V ±10% 50Hz for/05
	:120/230V ±15% 50Hz/60Hz for/01X
Power consumption	:≤ 250W at 2x55W output power
	:≤ 20W at stand by
Dimensions:(wxhxd)	:260x115x254 mm
Special features	:1 x 7 band spectrum analyser in FTD display
	:1 x 7 band equaliser: -5 free memories in presets
	-5 fixed (classic-vocal-rock-jazz-disco)
	:DSP function -5 effects
	(stadium-presence-live-hall-concert-off)
	:Surround switch
	:Micro input (adjustable mixing level) only/01X

Amplifier:

Output power &	:≥2X55W at 6Ω D≤10% (EIAJ) ±0,5dB for /01
Distortion (D)	:≥2x40W at 8Ω D=≤0,7%(IEC)
Sign.Noise:	
Phone input (IEC at Prated and Rsource=2k2)	:≥73dB (A-curve weighted)
Other inputs (IEC at Prated and Rsource=22k)	;≥75dB (A-curve weighted)
Crosstalk :	
Between channels	:≥50dB (100Hz.....10kHz)
source	:≥50dB (100Hz.....10kHz)
Headphone	:3,5mm stereo jack
Output voltage	:5V EMF at 40W/8Ω ±1dB
Output impedance	:120Ω ±10%
Frequency response:	
linear inputs	:40Hz -20kHz ±3dB
phone	:40Hz -18kHz ±3dB
Tone controle:	
Equaliser 2x7 band	:63Hz -160Hz - 400Hz -1kHz -2,5kHz -6,3kHz -16kHz +10dB to -10dB in steps of ±2dB
DBB(volume ≤-40dB at 100Hz)	:+10dB (±2dB)
Input sensitivity for 40W/8Ω ±1dB	:Tuner 200mV Ri 22kΩ
	:AUX 250mV Ri ≥ 20kΩ
	:CD 350mV Ri ≥ 20kΩ
	:Tape 350mV Ri ≥ 20kΩ
	:DCC 500mV Ri ≥ 20kΩ
	:Phono/MM 2,5mV Ri ≥ 47kΩ/220pf
	:Micro 1mV(level adjust) ≥10kΩ only/01X
Output voltage	:Tape 250mV Ro < 2k5
	:DCC 250mV Ro < 2k5

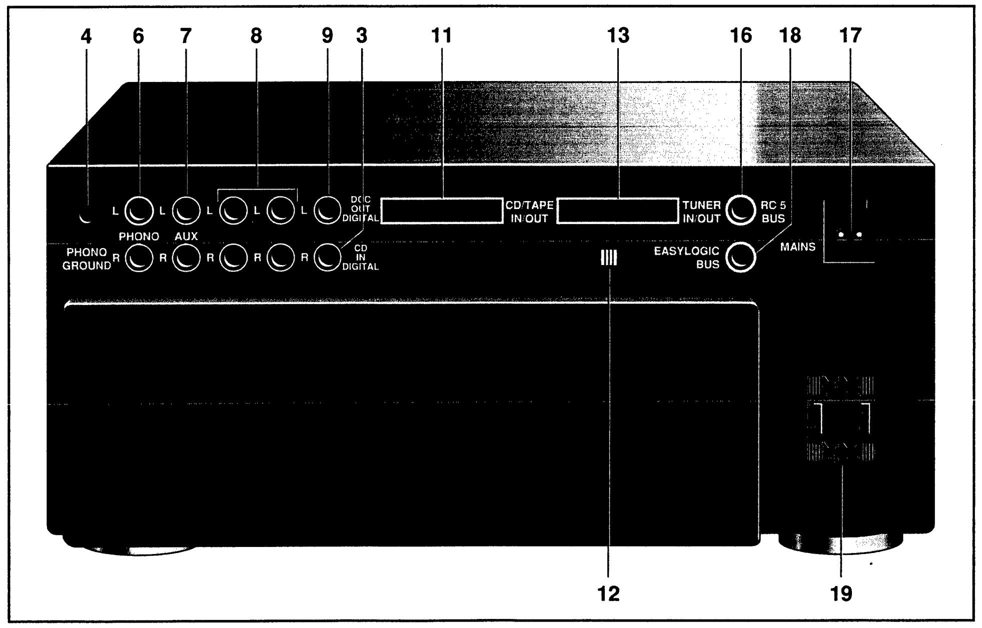
CONTROLS


IR REMOTE CONTROL
POWER OFF
STAND BY
LANGUAGE
SURROUND
HALL
TUNER
DSP
FLAT
PRESET
PROG
SELECT
ADJUST
SURROUND
MIN
MAX
DBB
PHONES
DCC
PHONO / AUX
MIC / MIX
MICRO
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18

		Pos nr.
1	IR Window	6652
2	Power ON/OFF Button	1271
3	DSP Button	1676
4	Headphone socket	1710
5	Flat Button	1674
6	Preset Button	1675
7	Program Button	1677
8	Multi Language	1673
9	Select Left Button	1671
	Richt Button	1672

		Pos nr.
10	DCC Button	1678
11	Display	1682
12	Aux/Phono Button	1668
13	Adjust Up Button	1669
	Down Button	1670
14	Volume Knob	3790
15	Surround Button	1667
16	DBB Button	1666
17	Micro Mix knob only/01X	3801
18	Micro input only/01X	1800

CONNECTIONS


4
6
7
8
9
3
11
13
16
18
17
L
PHONO
AUX
DCC OUT DIGITAL
CD/TAPE IN/OUT
TUNER IN/OUT
RC 5 BUS
PHONO GROUND
R
CD IN DIGITAL
EASYLOGIC BUS
MAINS
12
19

		Pos nr.
3	CD In Digital	1463
4	Phono Ground	
6	Phono	1551
7	Aux	1551
8	DCC In/Out	1551
9	DCC Out Digital	1463
11	CD/Tape In/Out	1458

		Pos nr.
12	Voltage Selector only/01X	
13	Tuner In/Out	1456
16	RC-5 Bus	1462
17	Mains	1270
18	Easy Logic Bus	1462
19	Speakers	1261

DISMANTLING OF SOURCE SELECTOR

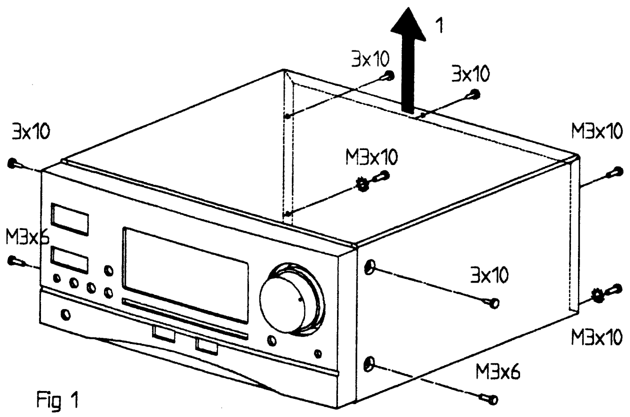

1
3x10
3x10
3x10
M3x10
M3x10
M3x6
3x10
M3x10
M3x6

Fig 1

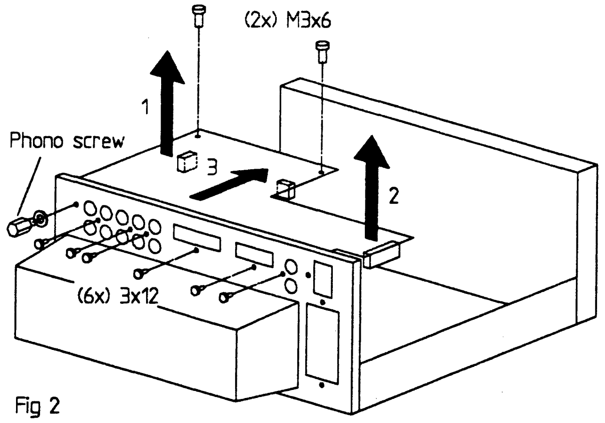

(2x) M3x6
1
Phono screw
3
2
(6x) 3x12

Fig 2

1 Remove 2x M3X6 screws
4x 3X10 screws
2x M3X10 screws with ring
1x M3X10 screw see fig 1
2 Remove cover as shown in fig 1 arrow 1

3 Remove 2x M3X6 screws
6x 3X12 screws
1x Phono ground screw see fig 2
4 Remove PCB as shown in fig 2 arrow 1 - 2 - 3

DISMANTLING OF FRONT & PCB

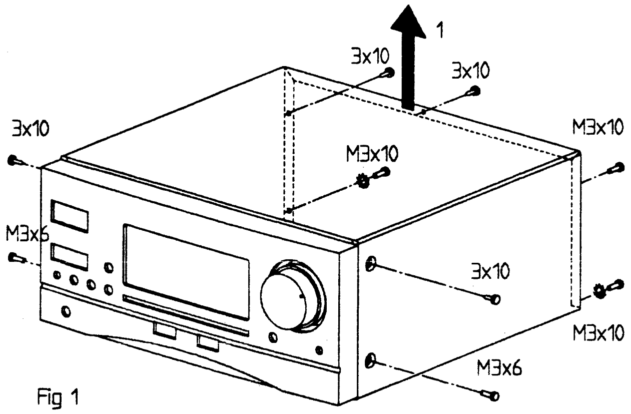

1
3x10
3x10
3x10
M3x10
M3x10
M3x6
3x10
M3x10
M3x6

Fig 1

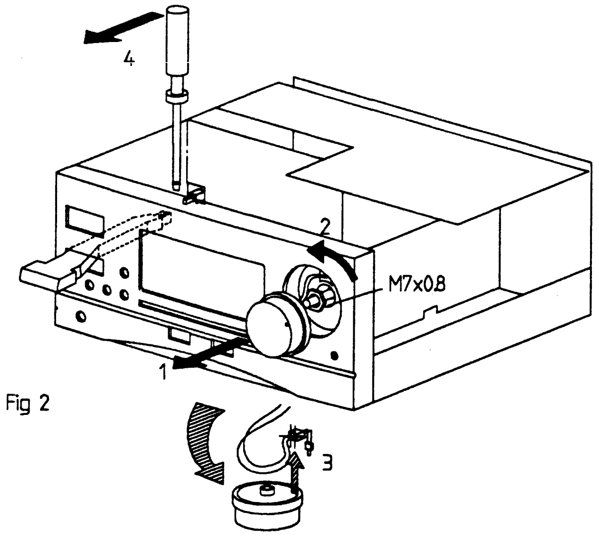


Fig 2

1 Remove 2x M3X6 screws
4x 3X10 screws
2x M3X10 screws with ring
1x M3X10 screw see fig 1
2 Remove cover as shown in fig 1 arrow 1

3 Remove power rod as shown in fig 2 arrow 4
4 Remove volume knob as shown in fig 2 arrow 1
5 Remove volume led as shown in fig 2 arrow 3
(puch snaps a littel open)
6 Remove nut M7X0,8 as shown in fig 2 arrow 2

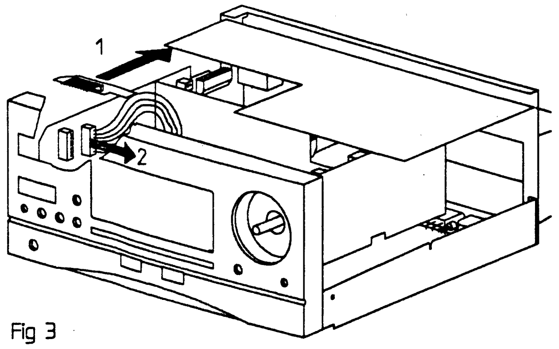


Fig 3

7 Remove lead assy as shown in fig 3 arrow 1 - 2

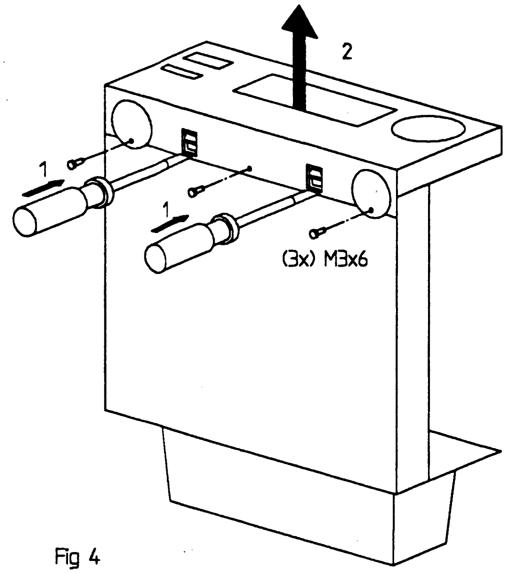


Fig 4

8 Remove 3x M3X6 screws see fig 3
9 Remove front as shown in fig 4 arrow 3 - 4

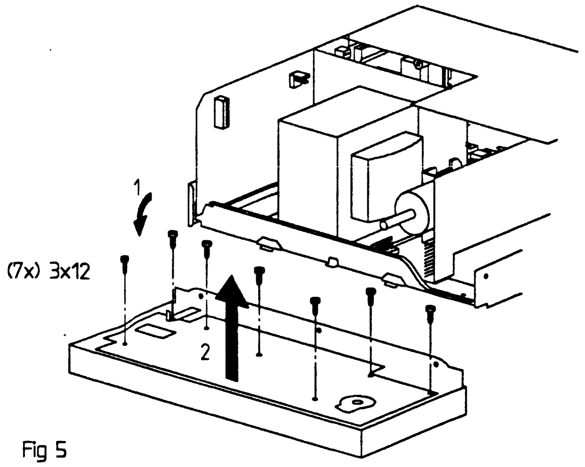


Fig 5

10 Tipp down front as shown in fig 5 arrow 1
11 Remove 7x 3X12 screws see fig 5
12 Remove PCB as shown in fig 5 arrow 2

DISMANTLING OF POWER PCB

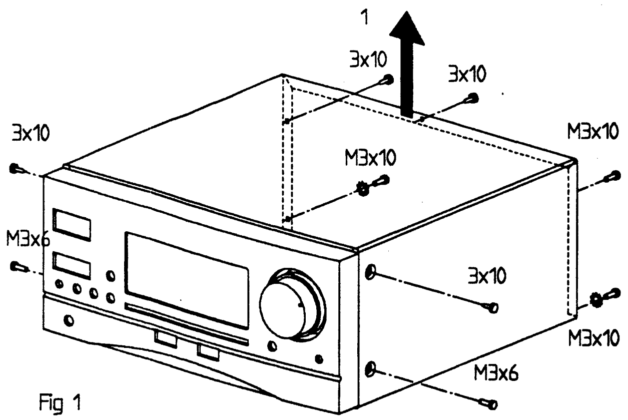

1
3x10
3x10
3x10
M3x10
M3x10
M3x6
3x10
M3x10
M3x6

Fig 1

1 Remove 2x M3X6 screws
4x 3X10 screws
2x M3X10 screws with ring
1x M3X10 screw see fig 1
2 Remove cover as shown in fig 1 arrow 1

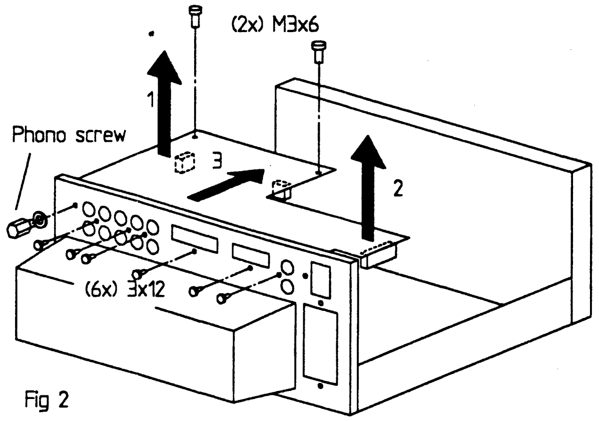

(2x) M3x6
Phono screw
1
3
2
(6x) 3x12

Fig 2

3 Remove 2x M3X6 screws
6x 3X12 screws
1x Phono ground screw see fig 2
4 Remove PCB ar shown in fig 2 arrow 1 - 2 - 3

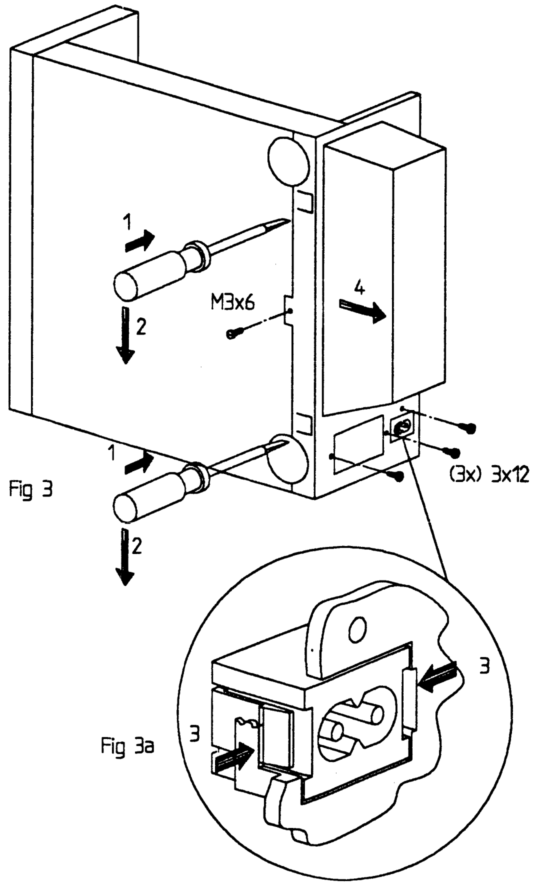

1
2
M3x6
4
1
2
(3x) 3x12
3
3

Fig 3

Fig 3a

5 Remove 1x M3X6 screw
3x 3X12 screws see fig 3
6 Remove backcover as shown in fig 3 arrow 1-2
To remove mainslet push snaps to inner side as shown fig 3a arrow 3
7 Remove backcover as shown in fig 3 arrow 4

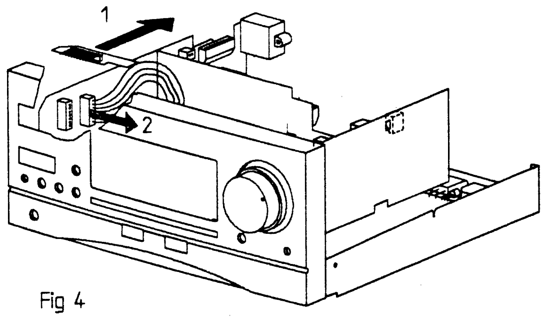


Fig 4

8 Remove lead assy as shown in fig 4 arrow 1 - 2

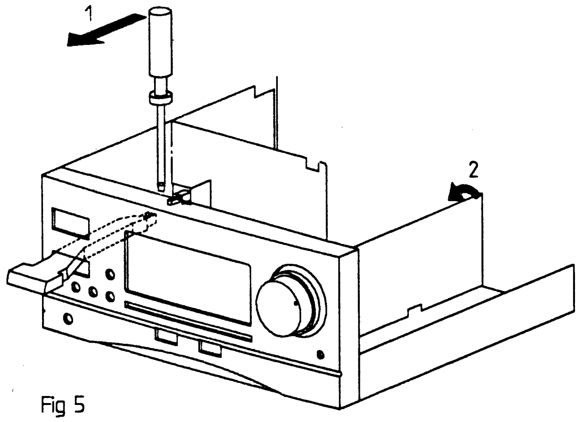


Fig 5

9 Remove power rod as shown in fig 5 arrow 1
10 Make volume panel loose as shown in fig 5 arrow 2

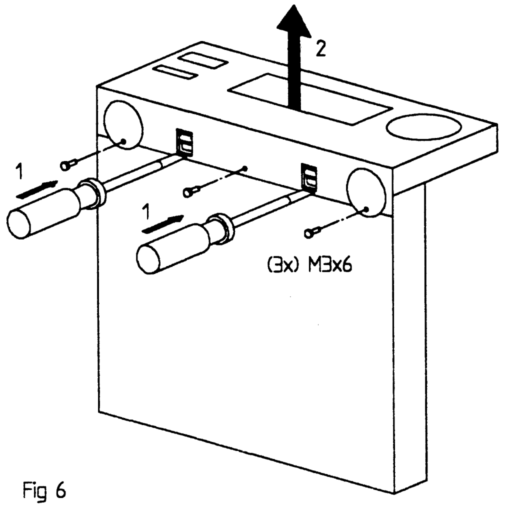


Fig 6

11 Remove 3x M3X6 screws
12 Remove front as shown in fig 6 arrow 1 - 2

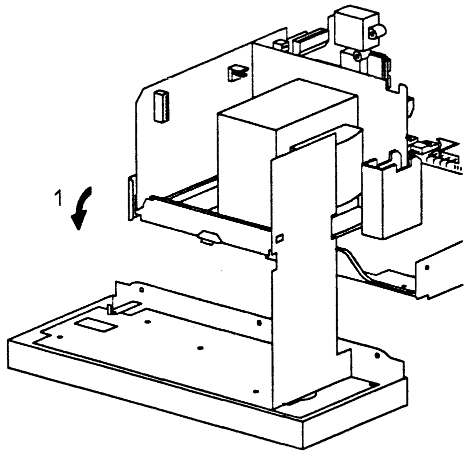


Fig 7

13 Tipp down front as show in fig 7 arrow 1

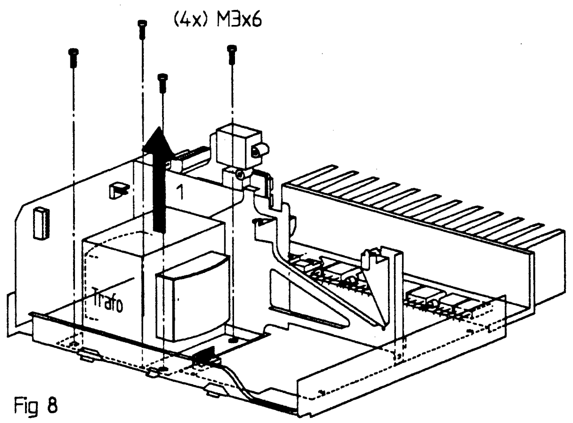

(4x) M3x6
1
Trafo

Fig 8

14 Remove 4x M3X6 screw see fig 8
15 Remove trafo as shown in fig 8 arrow 1

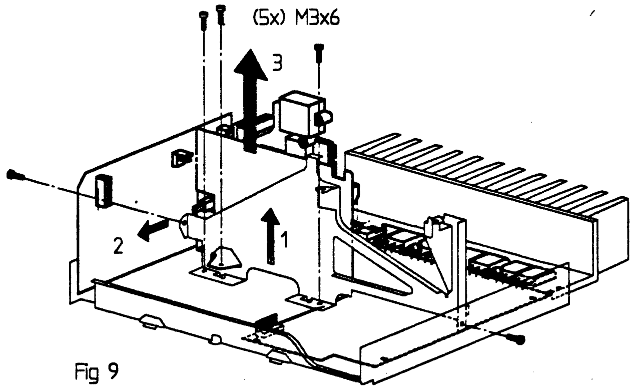


Fig 9

16 Remove 5x M3X6 screw see fig 9
17 Remove frame as shown in fig 9 arrow 1 - 2 - 3

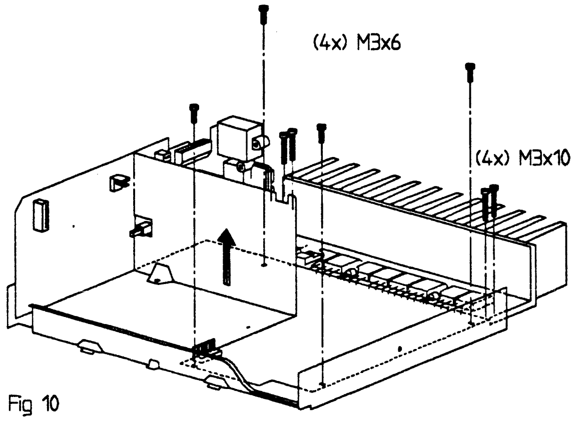

(4x) M3x6
(4x) M3x10

Fig 10

18 Remove 4x M3X10 screw
4x M3X6 screw see fig 10
19 Remove power PCB as shown in fig 10 arrow 1

SERVICE TEST PROGRAM

GENERAL

With this testprogramm the following parts can be checked.

1	Clock 8MHz	6	Spectrum
2	Key	7	Eeprom clear
3	Display	8	Eeprom
4	Balance	9	Source selection
5	Volume	10	Easylink

To go in test mode press **DBB** and the **PHONO/AUX** switch at the same time when aplifier is switched on.
The display shows for 2 sec.the loaded versions from the µ processor,and then SERVICE.
AUX are selected

1 CLOCK 8MHz TEST :

-Press the **DSP** button to start this testprogram.

A signal of 3.9kHz is put on the buzzer output (IC7883 pin 4 port13)
-To leave this test press **DSP** again,the display shows now SERVICE

2 KEY TEST :

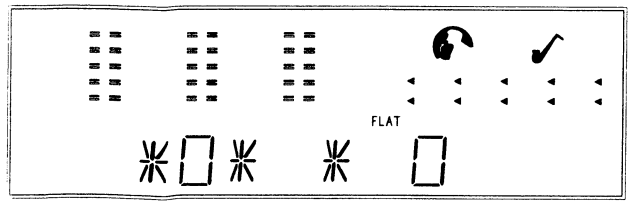
-Press the **FLAT** button to start this testprogram.

Press Button	Display Shows
DSP	KEY 17
PRESET	KEY 0E
PROGRAM	KEY 06
LANGUAGE	KEY 16
SELECT <	KEY 1E
SELECT >	KEY 1F
ADJUST DOWN	KEY 1B
ADJUST UP	KEY 1C
SURROUND	KEY 1A
DBB	KEY 19
DCC	KEY 07
PHONO/AUX	KEY 1D

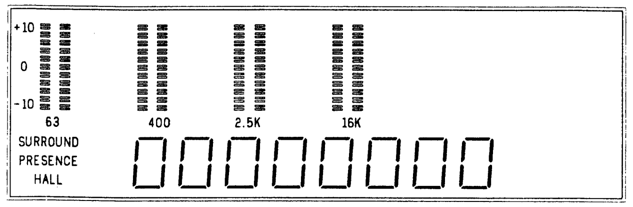
-When the test is OK the dispay shows Key OK,otherwise Key ** .
-To leave this test press **FLAT** again,the display shows now SERVICE.

3 DISPLAY TEST :

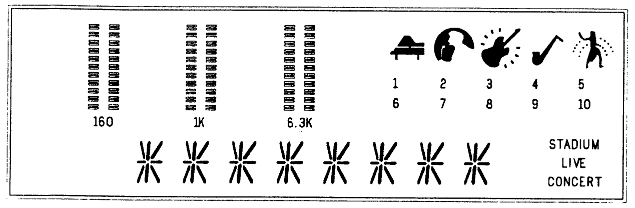
-Press the **PRESET** button to start this testprogram.
The dispay shows now DISPLAY.
--Press **ADJUST UP** button.The display shows



Press again **ADJUST UP** button,the display shows now:



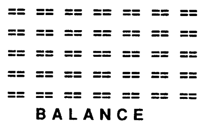
--Press again **ADJUST UP** button,the display shows now:



--Press again **ADJUST UP** button,the display light complitly up.
-To leave this test press **PRESET** button again,the display shows now SERVICE

4 BALANCE TEST :

-Press the **PROGAM** button to start this testprogram.
The dispay shows now DISPLAY:



--Press **ADJUST UP** button,after 8 times pressing this button the display shows :see fig a.
--Press **ADJUST DOWN** button,after 8 times pressing this button the display shows :see fig b.

Fig a

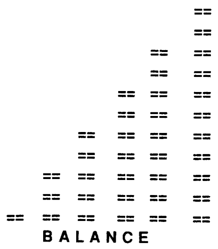
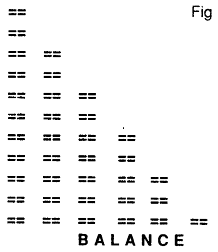


Fig b



-To leave this test press **PROGRAM** button again,the display shows now SERVICE

5 VOLUME TEST :

-Press the **SELECT <** button to start this testprogram.

The dispay shows now VOLUME.

--Press **ADJUST UP** button the volume turns clockwise
--Press **ADJUST DOWN** button the volume turns counter-clockwise
-To leave this test press **SELECT <** again,the display shows now SERVICE.

6 SPECTRUM TEST :

-Press the **SELECT >** button to start this testprogram.

The dispay shows now SPECTRUM.

--Press **ADJUST UP** button, one frequency band is select and this band is shows on display. SP - 16K . Press again on the ADJUST UP button to scroll through this test.The display shows SP - 6300 SP - 2500 SP - 1000 SP - 400 SP - 160 SP - 63
The first bar lights with ± 3mV on the aux input.
The 7 th bar lights with ± 20 mV on th aux input.
The 11 th bar lights with ± 100mV on the aux input

-To leave this test press **SELECT >** again,the display shows now SERVICE.

7 EEPROM CLEAR :

-Press the **ADJUST DOWN** button , the dispay shows CLR - PROM for 2 sec.With this test the eeprom is cleared automaticcally.

8 EEPROM TEST :

-Press the **ADJUST UP** button , the dispay shows PROM - OK for 2 sec. The eeprom is tested with an automatic write and read sequence.If a fault is found the dispay shows PROM - DEF .

9 SOURCE SELECTION TEST :

-Press the **DCC** button to start this testprogram.
The dispay shows now SOURCE.
--Press **ADJUST UP** button to select out the next source
TUNER TAPE CD PHONE AUX

-To leave this test press **DCC** again,the display shows now SERVICE.

10 EASYLINK TEST :

-With this test the following are test:
--if both easylink IN and OUT are high
---if not the display shown **EAS-CON**
--the EasOut* port is put low and the EasIn* must follow
---if not the display shown **EAS-LOW**
--the EasOut* port is put High and the EasIn* must follow
---if not the display shown **EAS-HIGH**
*EasOut port=P50 pin75 IC7683
*EasIn port=P11 pin 2 IC7683

-Press the **LANGUAGE** button to start this test:

The Easylink test is completed if the display shown after 2sec **EAY-OK**

SERVICE HINTS:

When the source selector panel is removed the power unit doesn't work anymore.
This can by helped in two ways.

-Make a shortcircuit over diode 6282 (power unit)
or
-Connect the voltage +14V /massa/ -14V (plug 1280 power unit)back on the source selector panel(plug 1454 selector)

Trade Mode:

When through same reasen the trade mode is working it can be switched off as following
Switch power off.
Press DCC button and AUX/Phone button at the same time when you switch the power on.

MISCELLANEOUS

23	4822 492 70583	CLAMPING SPRING
34	4822 255 40128	CLIP
56	4822 290 81515	TERMINAL PLATE
61	4822 256 91932	HOLDER
1250	4822 071 53152	FUSE 3.15A
1251	4822 071 53152	FUSE 3.15A
1252	4822 071 52002	FUSE T 2A
1253	4822 071 52002	FUSE T 2A
1261	4822 290 61102	L.S.PUCH TERMINAL
1270▲	4822 267 31383	MAINS SOCKET
1271▲	4822 276 13277	POWER SWITCH
1350▲	4822 071 51602	FUSE 1.6A
1351▲	4822 071 51602	FUSE 1.6A
1352▲	4822 071 51602	FUSE 1.6A
1353▲	4822 071 51602	FUSE 1.6A
1354▲	4822 071 56301	FUSE 630MA
1456	4822 267 60332	CONNECTOR BMT 13P
1458	4822 267 60331	CONNECTOR BMT 19P
1462	4822 267 31503	SOCKET 2F.
1463	4822 267 31504	SOCKET 2F.
1551	4822 267 51159	SOCKET 8F.
1666	4822 276 13114	TACT SWITCH
1667	4822 276 13114	TACT SWITCH
1668	4822 276 13114	TACT SWITCH
1669	4822 276 13114	TACT SWITCH
1670	4822 276 13114	TACT SWITCH
1671	4822 276 13114	TACT SWITCH
1672	4822 276 13114	TACT SWITCH
1673	4822 276 13114	TACT SWITCH
1674	4822 276 13114	TACT SWITCH
1675	4822 276 13114	TACT SWITCH
1676	4822 276 13114	TACT SWITCH
1677	4822 276 13114	TACT SWITCH
1678	4822 276 13114	TACT SWITCH
1682	4822 130 91134	DISPLAY
1710	4822 267 31514	HEADPHONE JACK
1800	4822 267 31607	MICRO SOCKET /01X

CAPACITORS

2250	4822 124 40242	1µF 20% 63V
2251	4822 124 40242	1µF 20% 63V
2252	4822 122 10183	100pF 5% 50V
2253	4822 122 10183	100pF 5% 50V
2254	4822 122 10183	100pF 5% 50V
2255	4822 122 10183	100pF 5% 50V
2256	4822 122 31435	470pF 10% 50V
2257	4822 122 31435	470pF 10% 50V
2258	4822 124 40196	220µF 20% 16V
2259	4822 124 40196	220µF 20% 16V
2260	4822 124 41643	100µF 20% 16V
2261	4822 124 41643	100µF 20% 16V
2264	4822 126 11307	180pF 10% 500V
2265	4822 126 11307	180pF 10% 500V
2268	4822 122 10173	820pF 10% 50V
2269	4822 122 10173	820pF 10% 50V
2270	5322 124 21189	100µF 20% 40V
2271	5322 124 21189	100µF 20% 40V
2272	5322 122 10237	150pF 10%Y5P 50V
2273	5322 122 10237	150pF 10%Y5P 50V
2274	4822 126 11308	47pF 5% 500V
2275	4822 126 11308	47pF 5% 500V
2276	4822 124 41584	100µF 20% 10V
2277	4822 124 41584	100µF 20% 10V
2278	4822 124 41596	22µF 20% 50V
2279	4822 124 41596	22µF 20% 50V
2280	4822 124 40242	1µF 20% 63V
2281	4822 124 40242	1µF 20% 63V
2284	4822 121 43526	47nF 5% 100V
2285	4822 121 43526	47nF 5% 100V
2286	4822 122 10176	4,7nF 10% 50V
2287	4822 122 10176	4,7nF 10% 50V
2288	4822 122 10176	4,7nF 10% 50V
2289	4822 122 10176	4,7nF 10% 50V
2290	4822 122 10166	22nF 30% 16V
2292	5322 121 42386	100nF 5% 63V
2293	4822 124 40435	10µF 20% 50V
2294	5322 122 10237	150pF 10%Y5P 50V
2295	5322 122 10237	150pF 10%Y5P 50V
2296	4822 124 40239	0,47µF 20% 63V
2300	4822 124 42128	4700µF 20% 63V
2301	4822 124 42128	4700µF 20% 63V
2302	4822 124 42393	2200µF 50V
2303	4822 124 42393	2200µF 50V
2304	4822 121 43875	47nF 5% 250V
2305	4822 121 43875	47nF 5% 250V
2306	4822 121 43875	47nF 5% 250V
2307	4822 121 42007	100nF 10% 100V
2308	4822 121 42007	100nF 10% 100V
2309	4822 121 42007	100nF 10% 100V
2350	4822 124 80415	4700µF 20% 50V /01X
2350	4822 124 80415	4700µF 50V /05
2350	4822 124 42121	4700µF 35V
2351	4822 124 41334	470µF 20% 35V
2351	4822 124 23172	470µF 50V /01X
2351	4822 124 23172	470µF 50V /05
2352	5322 124 21189	100µF 20% 40V
2353	4822 124 40433	47µF 20% 25V
2354	4822 122 10158	1nF 10% 50V
2355	4822 124 41525	100µF 20% 25V
2356	4822 124 40433	47µF 20% 25V
2357	4822 122 10158	1nF 10% 50V
2358	4822 124 23172	470µF 50V /01X
2358	4822 124 41334	470µF 20% 35V

2358	4822 124 23172	470µF 50V /05
2359	4822 124 41334	470µF 20% 35V
2359	4822 124 23172	470µF 50V /01X
2359	4822 124 23172	470µF 50V /05
2360	4822 124 80194	470µF 20% 100V
2361	4822 122 10158	1nF 10% 50V
2362	4822 122 10158	1nF 10% 50V
2363	4822 124 42119	4700µF 20% 25V
2364	4822 124 42118	41000µF 20% 25V
2365	4822 121 43526	47nF 5% 100V
2366	4822 121 43526	47nF 5% 100V
2367	4822 121 43526	47nF 5% 100V
2368	4822 124 40244	2,2µF 20% 63V
2369	4822 124 40177	47µF 20% 10V
2370	4822 124 40177	47µF 20% 10V
2371	4822 124 40242	1µF 20% 63V
2372	4822 124 41584	100µF 20% 10V
2451	5322 122 32531	100pF 5% 50V
2452	5322 122 32531	100pF 5% 50V
2453	4822 124 40242	1µF 20% 63V
2454	4822 124 40242	1µF 20% 63V
2455	5322 122 32531	100pF 5% 50V
2456	5322 122 32531	100pF 5% 50V
2457	5322 116 80853	560pF 5% 63V
2458	5322 116 80853	560pF 5% 63V
2459	4822 124 40435	10µF 20% 50V
2460	4822 124 40435	10µF 20% 50V
2461	4822 122 33177	10nF 20% 50V
2462	4822 122 33177	10nF 20% 50V
2463	4822 122 32627	2.7nF 10% 50V
2464	4822 122 32627	2.7nF 10% 50V
2465	4822 124 40435	10µF 20% 50V
2466	4822 124 40435	10µF 20% 50V
2467	4822 124 40433	47µF 20% 25V
2468	4822 124 40433	47µF 20% 25V
2469	5322 122 32654	22nF 10% 63V
2470	5322 122 32654	22nF 10% 63V
2471	4822 124 40242	1µF 20% 63V
2471	5322 124 41431	22µF 35V /01X
2472	4822 124 40242	1µF 20% 63V
2472	5322 124 41431	22µF 35V /01X
2473	5322 122 31946	27pF 10% 50V
2474	5322 122 31946	27pF 10% 50V
2475	5322 116 80853	560pF 5% 63V
2476	5322 116 80853	560pF 5% 63V
2477	4822 124 40433	47µF 20% 25V
2478	4822 124 40433	47µF 20% 25V
2479	4822 124 40433	47µF 20% 25V
2480	4822 124 40433	47µF 20% 25V
2481	5322 122 32654	22nF 10% 63V
2482	5322 122 32654	22nF 10% 63V
2483	4822 124 40433	47µF 20% 25V
2484	4822 124 40433	47µF 20% 25V
2485	5322 122 32654	22nF 10% 63V
2486	5322 122 32654	22nF 10% 63V
2487	4822 122 33342	33nF 10% 63V
2488	5322 122 32654	22nF 10% 63V
2527	4822 122 33342	33nF 10% 63V
2528	5322 122 31866	6,8nF 10% 63V
2529	5322 122 32654	22nF 10% 63V
2530	4822 122 33515	82pF 5% 63V
2531	5322 122 32838	82nF 10% 63V
2532	4822 124 41584	100µF 20% 10V
2533	4822 124 40849	330µF 20% 16V
2534	4822 122 32542	47nF 10% 63V
2535	4822 124 40435	10µF 20% 50V
2536	4822 122 33496	100nF 10% 63V
2537	4822 122 32927	220nF +80-20% 50V
2538	4822 122 32542	47nF 10% 63V
2539	5322 122 32531	100pF 5% 50V
2540	5322 122 32531	100pF 5% 50V
2541	5322 122 32654	22nF 10% 63V
2542	5322 122 32654	22nF 10% 63V
2543	4822 124 41584	100µF 20% 10V
2544	4822 124 41584	100µF 20% 10V
2545	5322 126 10465	3,9nF 10% 63V
2546	5322 126 10465	3,9nF 10% 63V
2547	4822 122 33893	18nF 10% 63V
2548	4822 122 33893	18nF 10% 63V
2549	4822 124 40435	10µF 20% 50V
2550	4822 124 40435	10µF 20% 50V
2551	4822 122 33175	2,2nF 20% 50V
2552	5322 122 32654	22nF 10% 63V
2553	5322 122 32661	56pF 5% 50V
2554	5322 122 32661	56pF 5% 50V
2555	5322 122 32661	56pF 5% 50V
2556	5322 122 32452	47pF 5% 63V
2559	5322 122 32531	100pF 5% 50V
2560	5322 122 32531	100pF 5% 50V
2574	4822 124 40435	10µF 20% 50V
2575	5322 122 32531	100pF 5% 50V
2576	5322 122 32531	100pF 5% 50V
2577	5322 116 80853	560pF 5% 63V
2578	5322 116 80853	560pF 5% 63V
2579	5322 126 10223	4,7nF 10% 63V
2580	5322 126 10223	4,7nF 10% 63V
2581	4822 124 40435	10µF 20% 50V
2582	4822 124 40435	10µF 20% 50V
2585	4822 122 33342	33nF 10% 63V
2586	4822 122 33496	100nF 10% 63V
2587	4822 124 40242	1µF 20% 63V
2588	5322 116 80853	560pF 5% 63V
2589	5322 116 80853	560pF 5% 63V
2590	5322 116 80853	560pF 5% 63V
2591	4822 124 40246	4,7µF 20% 63V
2592	4822 124 40246	4,7µF 20% 63V
2593	5322 122 32531	100pF 5% 50V
2594	5322 122 32531	100pF 5% 50V

2595	4822 122 32542	47nF 10% 63V
2596	4822 122 32542	47nF 10% 63V
2597	4822 124 40246	4,7µF 20% 63V
2598	4822 124 40246	4,7µF 20% 63V
2599	4822 124 40433	47µF 20% 25V
2601	5322 122 31865	1,5nF 10% 63V
2602	5322 122 31865	1,5nF 10% 63V
2603	4822 122 33891	3,3nF 10% 63V
2604	4822 122 33891	3,3nF 10% 63V
2605	4822 122 33336	8,2nF 10% 50V
2606	4822 122 33336	8,2nF 10% 50V
2607	5322 122 32654	22nF 10% 63V
2608	5322 122 32654	22nF 10% 63V
2609	4822 122 32183	56nF 10% 50V
2610	4822 122 32183	56nF 10% 50V
2611	4822 126 11691	150nF
2612	4822 126 11691	150nF
2613	5322 121 42661	330nF 5% 63V
2614	5322 121 42661	330nF 5% 63V
2615	4822 122 32627	2.7nF 10% 50V
2616	4822 122 32627	2.7nF 10% 50V
2617	5322 122 31866	6,8nF 10% 63V
2618	5322 122 31866	6,8nF 10% 63V
2619	4822 122 33893	18nF 10% 63V
2620	4822 122 33893	18nF 10% 63V
2621	4822 122 33608	39nF 10% 63V
2622	4822 122 33608	39nF 10% 63V
2623	4822 122 33496	100nF 10% 63V
2624	4822 122 33496	100nF 10% 63V
2625	4822 121 41738	270nF 5% 63V
2626	4822 121 41738	270nF 5% 63V
2627	5322 121 42498	680nF 5% 63V
2628	5322 121 42498	680nF 5% 63V
2629	5322 122 34099	470pF 10% 63V
2630	5322 122 34099	470pF 10% 63V
2631	4822 122 31797	22nF 10% 63V
2632	4822 122 31797	22nF 10% 63V
2633	4822 122 31797	22nF 10% 63V
2634	4822 122 31797	22nF 10% 63V
2635	4822 124 40246	4,7µF 20% 63V
2636	4822 124 40246	4,7µF 20% 63V
2637	4822 124 40246	4,7µF 20% 63V
2638	4822 124 40246	4,7µF 20% 63V
2639	4822 124 40433	47µF 20% 25V
2640	4822 124 40433	47µF 20% 25V
2641	4822 124 40433	47µF 20% 25V
2642	4822 124 40433	47µF 20% 25V
2645	5322 122 32658	22pF 5% 50V
2646	5322 122 32658	22pF 5% 50V
2647	5322 122 32531	100pF 5% 50V
2648	5322 122 32531	100pF 5% 50V
2649	5322 116 80853	560pF 5% 63V
2650	4822 121 51252	470nF 5% 63V
2650	5322 122 32654	22nF 10% 63V
2651	4822 124 23178	47µF 20% 16V
2652	4822 126 11585	22nF +80-20% 25V
2653	4822 121 42408	220nF 5% 63V
2654	4822 121 51387	10nF 20% 16V
2655	4822 126 11585	22nF +80-20% 25V
2656	4822 124 80195	470µF 20% 10V
2658	5322 121 42386	100nF 5% 63V
2673	4822 121 51252	470nF 5% 63V
2674	4822 121 51252	470nF 5% 63V
2679	5322 121 42386	100nF 5% 63V
2685	4822 122 10459	560pF 10% 50V
2761	4822 122 10459	560pF 10% 50V
2765	4822 124 41525	100µF 20% 25V
2766	4822 124 40246	4,7µF 20% 63V
2767	4822 124 40246	4,7µF 20% 63V
2768	4822 124 40435	10µF 20% 50V
2769	4822 124 40435	10µF 20% 50V
2770	4822 124 40435	10µF 20% 50V
2785	4822 124 41525	100µF 20% 25V
2787	4822 124 40435	10µF 20% 50V
2788	4822 124 41525	100µF 20% 25V
2789	4822 124 41525	100µF 20% 25V
2790	5322 121 42661	330nF 5% 63V
2791	4822 121 51387	10nF 20% 16V
2792	4822 121 51387	10nF 20% 16V
2795	4822 121 51356	180nF 10% 63V
2796	4822 121 51356	180nF 10% 63V
2797	4822 124 40435	10µF 20% 50V
2800	4822 124 40433	47µF 20% 25V
2801	4822 124 40433	47µF 20% 25V
2802	4822 122 33848	47pF 5%SL 50V
2803	4822 124 40435	10µF 20% 50V
2804	4822 124 40242	1µF 20% 63V
2805	4822 126 11714	4,7nF 20%
2806	4822 122 33195	100pF 10% 50V
2807	4822 121 51387	10nF 20% 16V
2808	4822 122 33195	100pF 10% 50V

RESISTORS

3250	4822 050 21002	1k 1% 0,6W
3251	4822 050 21002	1k 1% 0,6W
3258	4822 050 22203	22k 1% 0,6W
3259	4822 050 22203	22k 1% 0,6W
3260	4822 050 21002	1k 1% 0,6W
3261	4822 050 21002	1k 1% 0,6W
3262	4822 116 52224	470Ω 5% 0,5W
3263	4822 116 52224	470Ω 5% 0,5W
3264	4822 116 52217	270Ω 5% 0,5W
3265	4822 116 52217	270Ω 5% 0,5W
3268	4822 050 22203	22k 1% 0,6W
3269	4822 050 22203	22k 1% 0,6W
3270	4822 053 10182	1k8 5% 1W

3271	4822 053 10182	1k8 5% 1W
3272▲	4822 050 26801	680Ω 1% 0,6W
3273▲	4822 050 26801	680Ω 1% 0,6W
3274	4822 050 22202	2k2 1% 0,6W
3275	4822 050 22202	2k2 1% 0,6W
3276	4822 050 16809	68Ω 1% 0,4W
3277	4822 050 16809	68Ω 1% 0,4W
3278	4822 112 41112	1k5 5% 5,8W
3279	4822 112 41112	1k5 5% 5,8W
3280	4822 053 10152	1k5 5% 1W
3281	4822 053 10152	1k5 5% 1W
3282	4822 116 52263	2k7 5% 0,5W
3283	4822 116 52263	2k7 5% 0,5W
3284	4822 100 11677	470Ω 30%LIN 0.2W
3285	4822 100 11677	470Ω 30%LIN 0.2W
3286	4822 051 10561	560Ω 2% 0,25W
3287	4822 051 10561	560Ω 2% 0,25W
3288▲	4822 050 23002	3k 1% 0,6W
3289▲	4822 050 23002	3k 1% 0,6W
3290▲	4822 053 10222	2k2 5% 1W
3291▲	4822 053 10222	2k2 5% 1W
3294	4822 050 21801	180Ω 1% 0,6W
3295	4822 050 21801	180Ω 1% 0,6W
3296	4822 050 21801	180Ω 1% 0,6W
3297	4822 050 21801	180Ω 1% 0,6W
3298	4822 116 52224	470Ω 5% 0,5W
3299	4822 116 52224	470Ω 5% 0,5W
3300	4822 116 52224	470Ω 5% 0,5W
3301	4822 116 52224	470Ω 5% 0,5W
3302	4822 113 80598	0Ω22 5% 3W
3303	4822 113 80598	0Ω22 5% 3W
3304	4822 113 80598	0Ω22 5% 3W
3305	4822 113 80598	0Ω22 5% 3W
3306	4822 050 22203	22k 1% 0,6W
3307	4822 050 22203	22k 1% 0,6W
3308	4822 050 24702	4k7 1% 0,6W
3309	4822 050 24702	4k7 1% 0,6W
3310	4822 050 22202	2k2 1% 0,6W
3311	4822 050 22202	2k2 1% 0,6W
3312▲	4822 052 10279	27Ω 5% 0,33W
3313▲	4822 052 10279	27Ω 5% 0,33W
3314▲	4822 052 10109	10Ω 5% 0,33W
3315▲	4822 052 10109	10Ω 5% 0,33W
3316▲	4822 052 10478	4Ω7 5% 0,33W
3317▲	4822 052 10478	4Ω7 5% 0,33W
3318	4822 050 21002	1k 1% 0,6W
3319	4822 050 21002	1k 1% 0,6W
3320	4822 116 52234	100k 5% 0,5W
3321	4822 116 52234	100k 5% 0,5W
3322	4822 050 22203	22k 1% 0,6W
3323	4822 050 22203	22k 1% 0,6W
3324	4822 050 21001	100Ω 1% 0,6W
3325	4822 050 21001	100Ω 1% 0,6W
3330	4822 116 52234	100k 5% 0,5W
3331	4822 050 26803	68k 1% 0,6W
3332	4822 050 22203	22k 1% 0,6W
3333	4822 050 21501	150Ω 1% 0,6W
3334	4822 050 24702	4k7 1% 0,6W
3335	4822 050 24703	47k 1% 0,6W
3336	4822 050 22203	22k 1% 0,6W
3338	4822 050 26801	680Ω 1% 0,6W
3340	4822 113 80597	470Ω 10% 5W
3341	4822 113 80597	470Ω 10% 5W
3342▲	4822 050 21801	180Ω 1% 0,6W
3343▲	4822 050 21801	180Ω 1% 0,6W
3346	4822 050 22203	22k 1% 0,6W
3350▲	4822 050 21802	1k8 1% 0,6W
3351▲	4822 050 21202	1k2 1% 0,6W
3352▲	4822 052 10479	47Ω 5% 0,33W
3353	4822 050 22202	2k2 1% 0,6W
3354▲	4822 052 10478	4Ω7 5% 0,33W
3355	4822 050 21003	10k 1% 0,6W
3356	4822 050 24702	4k7 1% 0,6W
3357▲	4822 050 23302	3k3 1% 0,6W
3358▲	4822 052 10479	47Ω 5% 0,33W
3359▲	4822 050 21502	1k5 1% 0,6W
3361	4822 050 26802	6k8 1% 0,6W
3362▲	4822 053 10229	22Ω 5% 1W
3363▲	4822 053 10229	22Ω 5% 1W
3364	4822 050 21003	10k 1% 0,6W
3365	4822 050 23903	39k 1% 0,6W
3367	4822 050 25602	5k6 1% 0,6W
3368▲	4822 052 10229	22Ω 5% 0,33W
3369	4822 050 24703	47k 1% 0,6W
3370	4822 050 24702	4k7 1% 0,6W
3371	4822 050 24703	47k 1% 0,6W
3372	4822 050 24703	47k 1% 0,6W
3373	4822 050 21803	18k 1% 0,6W
3374	4822 050 21001	100Ω 1% 0,6W
3375	4822 050 21003	10k 1% 0,6W
3376	4822 050 26802	6k8 1% 0,6W
3377	4822 050 22203	22k 1% 0,6W
3378	4822 050 21003	10k 1% 0,6W
3379	4822 050 22202	2k2 1% 0,6W
3385	4822 050 22203	22k 1% 0,6W
3386▲	4822 052 10688	6Ω8 5% 0,33W
3388▲	4822 052 10688	6Ω8 5% 0,33W
3451	4822 050 23901	390Ω 1% 0,6W
3452	4822 050 23901	390Ω 1% 0,6W
3453	4822 050 13304	330k 1% 0,4W
3454	4822 050 13304	330k 1% 0,4W
3455	4822 050 15603	56k 1% 0,4W
3456	4822 050 15603	56k 1% 0,4W
3457	4822 050 23901	390Ω 1% 0,6W
3458	4822 050 23901	390Ω 1% 0,6W
3459	4822 050 21001	100Ω 1% 0,6W
3460	4822 050 21001	100Ω 1% 0,6W
3461	4822 050 25601	560Ω 1% 0,6W

3462	4822 050 25601	560Ω 1% 0,6W
3463	4822 050 13304	330k 1% 0,4W
3464	4822 050 13304	330k 1% 0,4W
3465	4822 050 12703	27k 1% 0,4W
3466	4822 050 12703	27k 1% 0,4W
3467	4822 116 52306	9k1 5% 0,5W
3468	4822 116 52306	9k1 5% 0,5W
3469	4822 116 52247	16k 5% 0,5W
3470	4822 116 52247	16k 5% 0,5W
3471▲	4822 116 52217	270Ω 5% 0,5W
3472▲	4822 116 52217	270Ω 5% 0,5W
3473	4822 050 22203	22k 1% 0,6W
3474	4822 050 22203	22k 1% 0,6W
3475	4822 050 22003	20k 1% 0,6W
3476	4822 050 22003	20k 1% 0,6W
3477	4822 051 20223	22k 5% 0,1W
3478	4822 050 22203	22k 1% 0,6W
3479	4822 051 20562	5k6 5% 0,1W
3480	4822 051 20562	5k6 5% 0,1W
3481	4822 116 52256	2k2 5% 0,5W
3482	4822 116 52256	2k2 5% 0,5W
3483	4822 116 52257	22k 5% 0,5W
3484	4822 116 52257	22k 5% 0,5W
3485	4822 116 52257	22k 5% 0,5W
3486	4822 116 52257	22k 5% 0,5W
3487	4822 050 21003	10k 1% 0,6W
3488	4822 050 21003	10k 1% 0,6W
3489	4822 050 21003	10k 1% 0,6W
3490	4822 050 21003	10k 1% 0,6W
3491	4822 116 52233	10k 5% 0,5W
3492	4822 116 52233	10k 5% 0,5W
3493	4822 050 21203	12k 1% 0,6W
3494	4822 050 21203	12k 1% 0,6W
3495	4822 116 52256	2k2 5% 0,5W
3496	4822 116 52256	2k2 5% 0,5W
3497▲	4822 116 52217	270Ω 5% 0,5W
3498▲	4822 116 52217	270Ω 5% 0,5W
3499	4822 116 52269	3k3 5% 0,5W
3500	4822 050 24701	470Ω 1% 0,6W
3501	4822 051 20223	22k 5% 0,1W
3502	4822 051 20223	22k 5% 0,1W
3503	4822 051 20104	100k 5% 0,1W
3504	4822 051 20104	100k 5% 0,1W
3505	4822 051 20683	68k 5% 0,1W
3506	4822 050 26803	68k 1% 0,6W
3507	4822 051 20561	560Ω 5% 0,1W
3508	4822 050 25601	560Ω 1% 0,6W
3509	4822 051 20104	100k 5% 0,1W
3510	4822 111 50521	100k 5%
3511▲	4822 116 52217	270Ω 5% 0,5W
3512▲	4822 116 52217	270Ω 5% 0,5W
3525	4822 116 52244	15k 5% 0,5W
3526	4822 116 52244	15k 5% 0,5W
3528	4822 050 24702	4k7 1% 0,6W

3530	4822 050 24702	4k7 1% 0,6W
3531	4822 116 52296	6k8 5% 0,5W
3532	4822 111 50521	100k 5%
3533	4822 050 12703	27k 1% 0,4W
3534	4822 116 82976	82k 5% 1/6W
3535	4822 116 52256	2k2 5% 0,5W
3536	4822 051 20471	470Ω 5% 0,1W
3537▲	4822 116 52217	270Ω 5% 0,5W
3538	4822 116 52243	1k5 5% 0,5W
3539	4822 116 52213	180Ω 5% 0,5W
3540	4822 051 20562	5k6 5% 0,1W
3541	4822 116 52257	22k 5% 0,5W
3542	4822 116 52257	22k 5% 0,5W
3543	4822 116 52233	10k 5% 0,5W
3544	4822 116 52233	10k 5% 0,5W
3545	4822 116 52263	2k7 5% 0,5W
3546	4822 050 22702	2k7 1% 0,6W
3549	4822 116 52233	10k 5% 0,5W
3550	4822 116 52233	10k 5% 0,5W
3553	4822 116 52256	2k2 5% 0,5W
3554	4822 116 52256	2k2 5% 0,5W
3555	4822 116 52283	4k7 5% 0,5W
3556	4822 116 52283	4k7 5% 0,5W
3557	4822 116 52283	4k7 5% 0,5W
3558	4822 116 52283	4k7 5% 0,5W
3559	4822 051 20332	3k3 5% 0,1W
3560	4822 051 20332	3k3 5% 0,1W
3561	4822 050 23902	3k9 1% 0,6W
3562	4822 050 23902	3k9 1% 0,6W
3563	4822 116 52263	2k7 5% 0,5W
3564	4822 116 52263	2k7 5% 0,5W
3565	4822 051 10102	1k 2% 0,25W
3566	4822 051 10102	1k 2% 0,25W
3567	4822 051 10102	1k 2% 0,25W
3568	4822 051 20101	100Ω 5% 0,1W
3569	4822 051 20008	0Ω JUMP.
3570	4822 051 20109	10Ω 5% 0,1W
3575	4822 051 10102	1k 2% 0,25W
3576	4822 051 10102	1k 2% 0,25W
3577	4822 051 20103	10k 5% 0,1W
3578	4822 051 20103	10k 5% 0,1W
3579▲	4822 116 52217	270Ω 5% 0,5W
3580▲	4822 116 52217	270Ω 5% 0,5W
3581	4822 050 21003	10k 1% 0,6W
3582	4822 051 10106	10M 5% 0,25W
3583	4822 051 20104	100k 5% 0,1W
3584	4822 051 20473	47k 5% 0,1W
3585	4822 050 21002	1k 1% 0,6W
3586	4822 050 21002	1k 1% 0,6W
3587	4822 050 21002	1k 1% 0,6W
3601	4822 116 52238	12k 5% 0,5W
3602	4822 116 52238	12k 5% 0,5W
3603	4822 051 20123	12k 5% 0,1W
3604	4822 051 20123	12k 5% 0,1W

3605	4822 050 21003	10k 1% 0,6W
3606	4822 051 20103	10k 5% 0,1W
3607	4822 051 20474	470k 5% 0,1W
3608	4822 051 20474	470k 5% 0,1W
3609	4822 051 20474	470k 5% 0,1W
3610	4822 051 20474	470k 5% 0,1W
3611	4822 051 20474	470k 5% 0,1W
3612	4822 051 20474	470k 5% 0,1W
3613	4822 051 20474	470k 5% 0,1W
3614	4822 051 20474	470k 5% 0,1W
3615	4822 051 20474	470k 5% 0,1W
3616	4822 051 20474	470k 5% 0,1W
3617	4822 051 20474	470k 5% 0,1W
3618	4822 051 20474	470k 5% 0,1W
3619	4822 051 20474	470k 5% 0,1W
3620	4822 051 20474	470k 5% 0,1W
3621▲	4822 052 10159	15Ω 5% 0,33W
3622▲	4822 052 10159	15Ω 5% 0,33W
3623	4822 051 20104	100k 5% 0,1W
3624	4822 051 20104	100k 5% 0,1W
3625	4822 051 20104	100k 5% 0,1W
3626	4822 051 20104	100k 5% 0,1W
3627	4822 051 20104	100k 5% 0,1W
3628	4822 051 20104	100k 5% 0,1W
3629▲	4822 052 10159	15Ω 5% 0,33W
3630▲	4822 052 10159	15Ω 5% 0,33W
3631	4822 051 20104	100k 5% 0,1W
3632	4822 051 20104	100k 5% 0,1W
3633	4822 051 20104	100k 5% 0,1W
3634	4822 051 20104	100k 5% 0,1W
3635	4822 051 20222	2k2 5% 0,1W /01X
3636	4822 051 20222	2k2 5% 0,1W /01X
3637▲	4822 116 52269	3k3 5% 0,33W
3638	4822 051 20109	10Ω 5% 0,1W
3639	4822 051 20008	0Ω JUMP.
3640	4822 051 10102	1k 2% 0,25W
3641	4822 051 10102	1k 2% 0,25W
3642	4822 051 10102	1k 2% 0,25W
3643	4822 051 20103	10k 5% 0,1W
3644	4822 051 20103	10k 5% 0,1W
3650	4822 116 52233	10k 5% 0,5W
3651	4822 116 52234	100k 5% 0,5W
3654	4822 116 52284	47k 5% 0,5W
3655	4822 116 52284	47k 5% 0,5W
3656	4822 116 52284	47k 5% 0,5W
3657	4822 116 52251	18k 5% 0,5W
3658	4822 116 52283	4k7 5% 0,5W
3659	4822 116 52233	10k 5% 0,5W
3660	4822 116 52219	330Ω 5% 0,5W
3661	4822 116 52233	10k 5% 0,5W
3666	4822 050 11002	1k 1% 0,4W
3667	4822 050 11002	1k 1% 0,4W
3668	4822 116 52233	10k 5% 0,5W
3669	4822 050 11002	1k 1% 0,4W

3671	4822 116 52256	2k2 5% 0,5W
3673	4822 116 52233	10k 5% 0,5W
3674	4822 116 52296	6k8 5% 0,5W
3675	4822 116 52224	470Ω 5% 0,5W
3676	4822 050 16802	6k8 1% 0,4W
3677	4822 116 52224	470Ω 5% 0,5W
3680	4822 050 24702	4k7 1% 0,6W
3682	4822 050 11002	1k 1% 0,4W
3683	4822 050 11002	1k 1% 0,4W
3684	4822 050 11002	1k 1% 0,4W
3685	4822 050 11002	1k 1% 0,4W
3690	4822 116 52233	10k 5% 0,5W
3691	4822 116 52304	82k 5% 0,5W
3692	4822 116 52233	10k 5% 0,5W
3693	4822 116 52304	82k 5% 0,5W
3694	4822 116 52233	10k 5% 0,5W
3695	4822 116 52304	82k 5% 0,5W
3696	4822 116 52233	10k 5% 0,5W
3697	4822 116 52304	82k 5% 0,5W
3700▲	4822 052 10188	1Ω8 5% 0,33W
3701▲	4822 052 10188	1Ω8 5% 0,33W
3705	4822 116 52297	68k 5% 0,5W
3706	4822 116 52297	68k 5% 0,5W
3707	4822 116 52297	68k 5% 0,5W
3708	4822 116 52297	68k 5% 0,5W
3712	4822 050 24702	4k7 1% 0,6W
3713	4822 050 24702	4k7 1% 0,6W
3714	4822 116 52283	4k7 5% 0,5W
3718	4822 050 16802	6k8 1% 0,4W
3719	4822 050 11002	1k 1% 0,4W
3720	4822 050 21002	1k 1% 0,6W
3721	4822 050 11002	1k 1% 0,4W
3722	4822 050 21002	1k 1% 0,6W
3723	4822 050 21002	1k 1% 0,6W
3724	4822 050 21002	1k 1% 0,6W
3725	4822 050 21002	1k 1% 0,6W
3726	4822 050 24702	4k7 1% 0,6W
3727	4822 050 11002	1k 1% 0,4W
3736	4822 116 52283	4k7 5% 0,5W
3737	4822 116 52283	4k7 5% 0,5W
3738	4822 116 52283	4k7 5% 0,5W
3739	4822 050 21002	1k 1% 0,6W
3740	4822 050 11002	1k 1% 0,4W
3741	4822 050 11002	1k 1% 0,4W
3742	4822 050 21002	1k 1% 0,6W
3743	4822 050 21002	1k 1% 0,6W
3745	4822 116 52283	4k7 5% 0,5W
3746	4822 116 52233	10k 5% 0,5W
3747	4822 116 52243	1k5 5% 0,5W
3764	4822 050 22201	220Ω 1% 0,6W
3765	4822 050 23902	3k9 1% 0,6W
3766	4822 116 52233	10k 5% 0,5W
3767	4822 116 52195	47Ω 5% 0,5W
3768	4822 116 52257	22k 5% 0,5W

3769	4822 116 52233	10k 5% 0,5W
3770	4822 116 52233	10k 5% 0,5W
3771	4822 116 52233	10k 5% 0,5W
3772	4822 116 52244	15k 5% 0,5W
3773	4822 116 52258	220k 5% 0,5W
3774	4822 116 52233	10k 5% 0,5W
3775	4822 116 52258	220k 5% 0,5W
3776	4822 116 52264	27k 5% 0,5W
3777	4822 116 52264	27k 5% 0,5W
3778	4822 116 52269	3k3 5% 0,5W
3779	4822 116 52238	12k 5% 0,5W
3780	4822 050 23301	330Ω 1% 0,6W
3781	4822 050 23301	330Ω 1% 0,6W
3785	4822 050 23901	390Ω 1% 0,6W
3786	4822 116 52239	120k 5% 0,5W
3787	4822 050 22201	220Ω 1% 0,6W
3788	4822 116 52233	10k 5% 0,5W
3789▲	4822 052 10228	2Ω2 5% 0,33W
3790	4822 102 10414	20kX2 20% 0,05W
3791	4822 116 52243	1k5 5% 0,5W
3792	4822 116 52243	1k5 5% 0,5W
3793	4822 050 11002	1k 1% 0,4W
3794	4822 050 11002	1k 1% 0,4W
3795▲	4822 052 10109	10Ω 5% 0,33W
3796	4822 116 52283	4k7 5% 0,5W
3797	4822 116 52233	10k 5% 0,5W
3798	4822 116 52284	47k 5% 0,5W
3799	4822 116 52234	100k 5% 0,5W
3801	4822 101 11245	MICRO POTM 10k /01X
3802	4822 116 52297	68k 5% 0,5W
3803	4822 116 52291	56k 5% 0,5W
3804	4822 116 52224	470Ω 5% 0,5W
3805	4822 116 52283	4k7 5% 0,5W
3806	4822 116 52202	82Ω 5% 0,5W
3807	4822 116 52234	100k 5% 0,5W
3808	4822 116 52305	820k 5% 0,5W
3809	4822 050 11002	1k 1% 0,4W
3810	4822 116 52215	220Ω 5% 0,5W

COILS

5001▲	4822 146 31132	TRAFO ASSY /01X
5001▲	4822 146 31133	MAINS TRAFO /05
5001▲	4822 146 31123	MAINS TRAFO
5250▲	4822 280 70368	RELAY
5252	4822 157 62255	COIL
5253	4822 157 62255	COIL
5525	4822 242 81019	CST 3,58MHz
5526	4822 157 62552	2,2μH
5650	5322 242 73697	CST 8 MHz
5652	4822 157 60147	2,2μH

DIODES

6001	4822 130 83077	LED VOLUME KNOB
6250	4822 130 61219	BZX79-C10
6251	4822 130 61219	BZX79-C10
6252	4822 130 61219	BZX79-C10
6253	4822 130 61219	BZX79-C10
6256	4822 130 30842	BAV21
6257	4822 130 30842	BAV21
6258	5322 130 31504	BZX79-B3V3
6259	5322 130 31504	BZX79-B3V3
6260	5322 130 31504	BZX79-C3V3
6261	5322 130 31504	BZX79-C3V3
6262	4822 130 30842	BAV21
6263	4822 130 30842	BAV21
6264	4822 130 30621	1N4148
6265	4822 130 30621	1N4148
6266	4822 130 30621	1N4148
6267	4822 130 30621	1N4148
6268	4822 130 30621	1N4148
6269	4822 130 30621	1N4148
6270	4822 130 30621	1N4148
6271	4822 130 30621	1N4148
6272	4822 130 30621	1N4148
6273	4822 130 30621	1N4148
6274	4822 130 30621	1N4148
6275	4822 130 30621	1N4148
6276	4822 130 30621	1N4148
6277	4822 130 30621	1N4148
6278	4822 130 30621	1N4148
6280	4822 130 30621	1N4148
6281	4822 130 30621	1N4148
6282	4822 130 30621	1N4148
6283	4822 130 30621	1N4148
6288	4822 130 30621	1N4148
6289	4822 130 30621	1N4148
6290	4822 130 30621	1N4148
6291	4822 130 30621	1N4148
6292	4822 130 61219	BZX79-C10
6294	4822 130 30842	BAV21
6295	4822 130 30842	BAV21
6300▲	5322 130 32184	BYV27-50
6301▲	5322 130 32184	BYV27-50
6302▲	5322 130 32184	BYV27-50
6303▲	5322 130 32184	BYV27-50
6304▲	4822 130 82079	D3SBA20
6305▲	4822 130 82079	D3SBA20
6350▲	5322 130 30684	1N4002GP
6351▲	4822 130 31982	BYV27-100
6352▲	4822 130 31982	BYV27-100
6353▲	5322 130 30684	1N4002GP
6354▲	5322 130 30684	1N4002GP

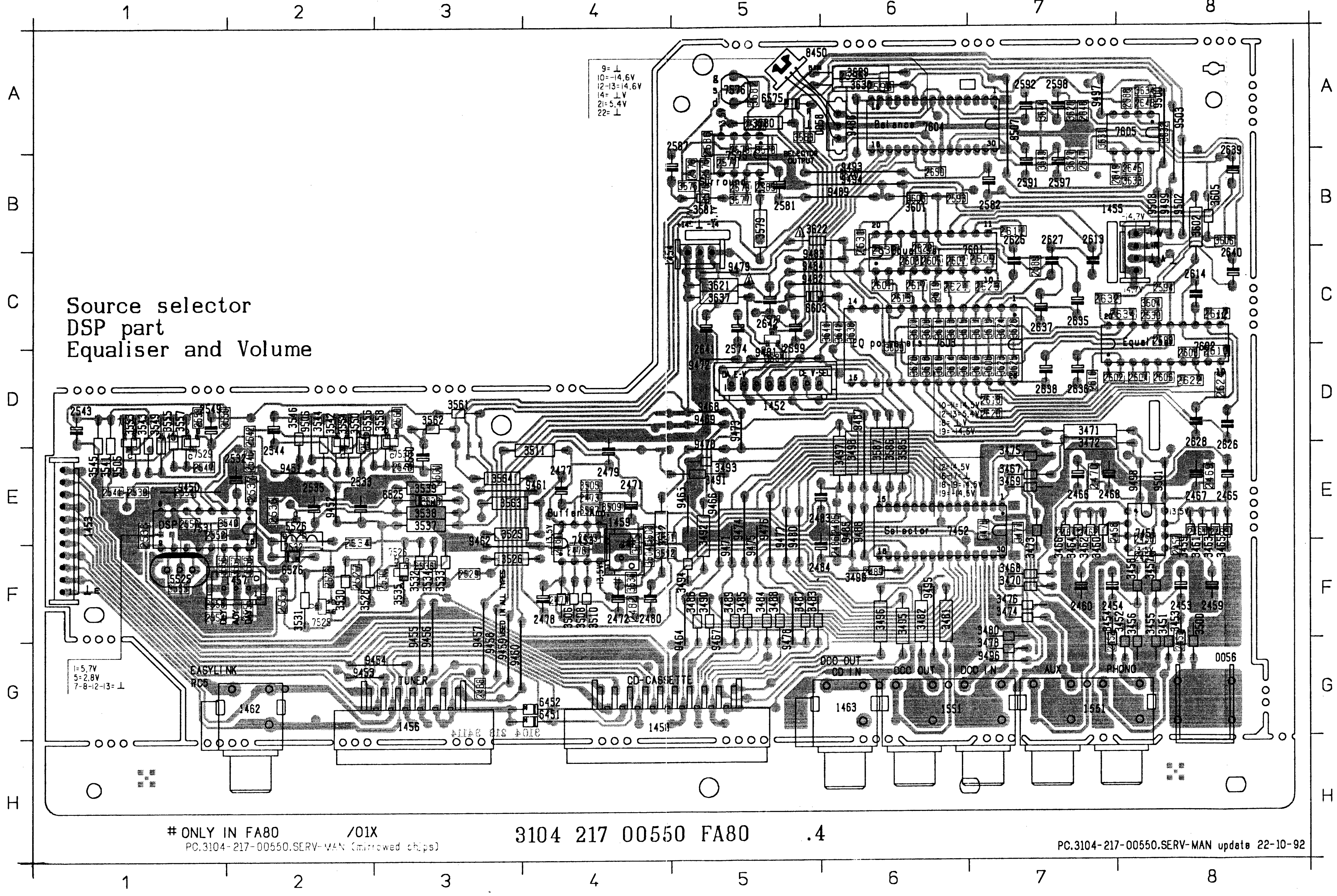
6355▲	5322 130 30684	1N4002GP
6356▲	5322 130 32184	BYV27-50
6357▲	5322 130 32184	BYV27-50
6358▲	5322 130 30684	1N4002GP
6359▲	5322 130 30684	1N4002GP
6360▲	5322 130 30684	1N4002GP
6361▲	5322 130 30684	1N4002GP
6362	4822 130 34268	BZX79-C16
6363	4822 130 30621	1N4148
6364	4822 130 34382	BZX79-C8V2
6365	4822 130 34281	BZX79-C15
6366	4822 130 31024	BZX79-C18
6367	4822 130 34195	BZX79-C13
6368	4822 130 30621	1N4148
6369	4822 130 34174	BZX79-C4V7
6370	4822 130 80928	BZX79-C30
6371	4822 130 30621	1N4148
6372	4822 130 30621	1N4148
6373	4822 130 30621	1N4148
6374	4822 130 34278	BZX79-C6V8
6375	4822 130 61219	BZX79-B10
6376	4822 130 30621	1N4148
6377	4822 130 30621	1N4148
6378▲	5322 130 30684	1N4002GP
6379▲	5322 130 30684	1N4002GP
6380▲	5322 130 30684	1N4002GP
6381▲	5322 130 30684	1N4002GP
6382	4822 130 30621	1N4148
6383	4822 130 30621	1N4148
6384	4822 130 31024	BZX79-C18
6386	4822 130 30621	1N4148
6388	4822 130 30621	1N4148
6389	4822 130 30621	1N4148
6451	5322 130 34563	BZX79-C2V7
6452	4822 130 34173	BZX79-B5V6
6525	4822 130 34173	BZX79-C5V6
6526	4822 130 30621	1N4148
6575	4822 130 30621	1N4148
6603	4822 130 34233	BZX79-C5V1
6652	4822 130 81254	GP1U520X
6653	4822 130 81007	LT3P82A
6654	4822 130 81007	LT3P82A
6656	4822 130 30621	1N4148
6664	4822 130 30621	1N4148
6665	4822 130 30621	1N4148
6666	4822 130 30621	1N4148
6667	4822 130 30621	1N4148
6780	4822 130 34233	BZX79-C5V1
6781	4822 130 34233	BZX79-C5V1
6782	4822 130 34233	BZX79-C5V1
6783	4822 130 30621	1N4148
6790	4822 130 30621	1N4148

TRANSISTORS & IC's

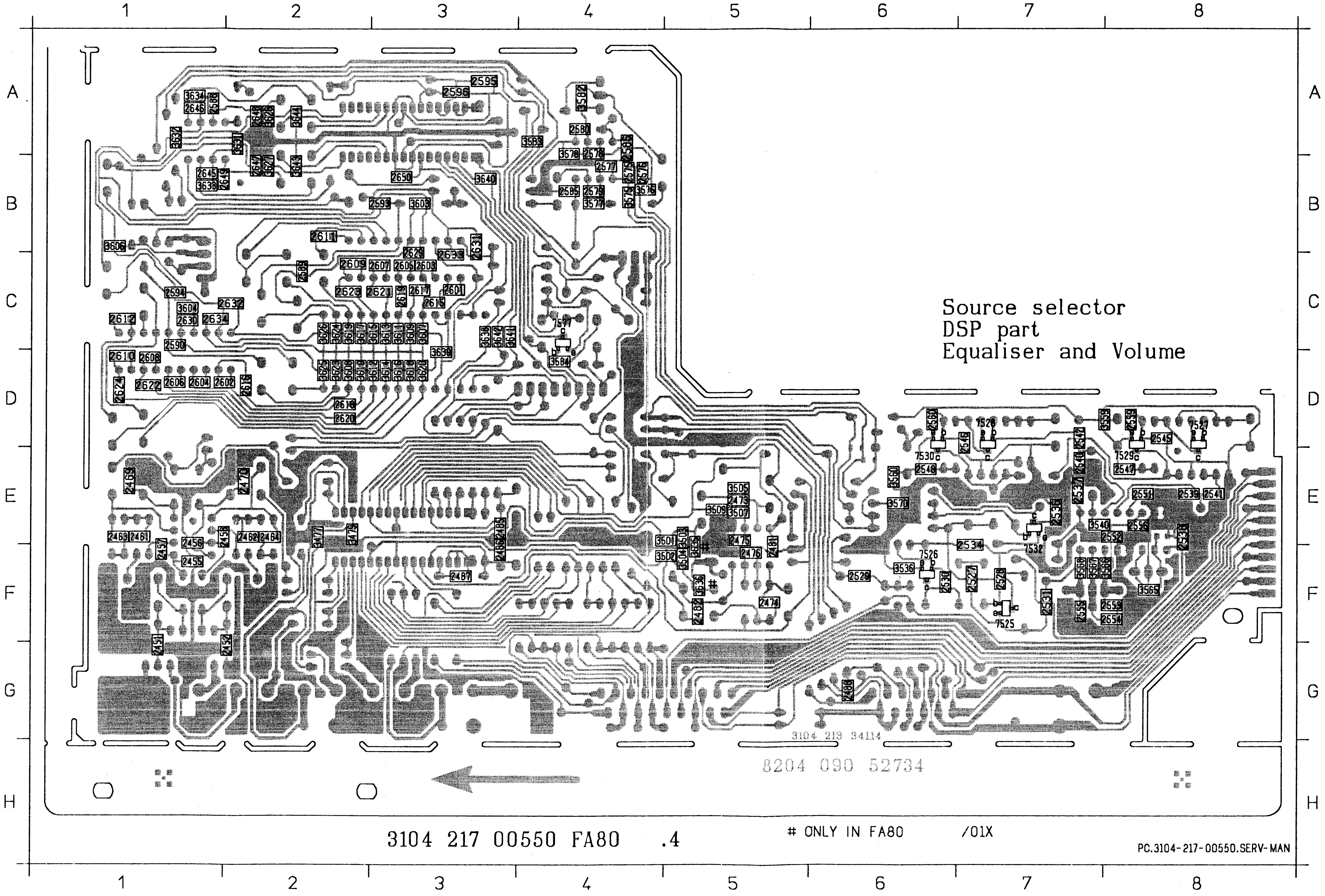
7255	4822 209 70157	NJM4560DD
7256	4822 130 41691	BC556B
7257	4822 130 41691	BC556B
7258▲	5322 130 44413	BF459
7259▲	5322 130 44413	BF459
7260	4822 130 40937	BC548B
7261	4822 130 40937	BC548B
7264	4822 130 40937	BC548B
7265	4822 130 40937	BC548B
7266	4822 130 44197	BC558B
7267	4822 130 44197	BC558B
7268▲	4822 130 62963	2SD1894
7269▲	4822 130 62963	2SD1894
7270▲	4822 130 62963	2SD1894
7271▲	4822 130 62963	2SD1894
7272▲	4822 130 63073	2SB1254
7273▲	4822 130 63073	2SB1254
7274▲	4822 130 63073	2SB1254
7275▲	4822 130 63073	2SB1254
7276	4822 130 40937	BC548B
7277	4822 130 40937	BC548B
7280	4822 130 44461	BC546B
7281	4822 130 40937	BC548B
7282	4822 130 40937	BC548B
7283	4822 130 40937	BC548B
7284	4822 130 44461	BC546B
7350	4822 130 62952	BDT61F
7351	4822 130 60542	BD244B
7352	5322 130 61677	BC875
7353	5322 130 60206	BD680
7354	4822 130 41344	BC337-40
7355	4822 130 60542	BD244B
7356	4822 130 62952	BDT61F
7357	4822 130 40937	BC548B
7358	4822 130 40937	BC548B
7359	4822 130 44197	BC558B
7360	5322 130 42505	BC876
7361	4822 130 44197	BC558B
7362	4822 130 40937	BC548B
7451	4822 209 70157	NJM4560DD
7452	4822 209 72748	LC7821
7453	4822 209 70157	NJM4560DD
7525	5322 130 42136	BC848C
7526	5322 130 41982	BC848B
7527	5322 130 41982	BC848B
7528	5322 130 41982	BC848B
7529	5322 130 42136	BC848C
7530	5322 130 42136	BC848C
7531	4822 209 30562	YM3428
7532	5322 130 41982	BC848B

0056 G8	1551 G6	2478 F4	2574 D5	2626 E8	3452 F8	3464 F7	3476 F7	3490 F5	3508 F4	3535 F3	3553 D1	3581 B5	5525 F1	7575 B5	9454 G3
0058 B8	2453 F8	2479 E4	2581 B5	2627 B7	3453 F8	3465 F8	3478 G7	3491 E5	3510 F4	3537 E3	3554 D2	3585 E6	5526 E2	7576 A5	9455 F3
1452 D5	2454 F7	2480 F4	2582 B7	2628 E8	3454 F7	3466 F7	3480 F7	3492 E5	3511 E4	3538 E3	3555 D1	3586 E6	6451 G4	7601 C7	9456 F3
1453 E1	2459 F8	2483 E5	2587 A5	2635 C7	3455 F8	3467 E7	3481 F6	3493 E5	3512 E4	3539 E3	3556 D2	3587 E6	6452 G4	7602 D8	9457 F3
1454 C4	2460 F7	2484 F5	2591 B7	2636 D7	3456 F8	3468 F7	3482 F6	3494 F5	3525 E3	3541 E1	3557 D1	3601 B6	6525 E3	7603 D6	9458 G3
1455 B8	2465 E8	2532 E2	2592 A7	2637 C7	3457 F8	3469 E7	3483 F5	3495 F6	3526 F3	3542 D2	3558 D3	3602 B8	6526 F2	7604 A6	9459 G3
1456 G3	2466 E7	2533 E2	2597 B7	2638 D7	3458 F8	3470 F7	3484 F5	3496 F6	3528 F2	3543 D1	3561 D3	3605 B8	6575 A5	7605 A8	9460 G3
1457 F2	2467 E8	2535 E2	2598 A7	2639 B8	3459 F8	3471 D7	3485 F5	3497 E6	3530 F2	3544 D2	3562 D3	3621 C5	6603 C6	8450 A5	9461 E4
1458 G4	2468 E7	2543 D1	2599 D5	2640 C8	3460 F7	3472 E7	3486 F5	3498 E6	3531 F2	3545 E1	3563 E3	3622 B5	7451 E8	9450 E1	9462 F3
1459 E4	2471 E4	2544 E2	2613 B7	2641 D5	3461 F8	3473 F7	3487 F5	3499 F6	3532 F3	3546 D2	3564 E3	3629 A6	7452 E6	9451 E2	9464 F5
1462 G2	2472 F4	2549 D1	2614 C8	2642 C5	3462 F7	3474 F7	3488 F5	3500 F8	3533 F3	3549 D1	3579 B5	3630 A6	7453 F4	9452 E2	9465 E5
1463 G6	2477 E4	2550 E3	2625 B7	3451 F8	3463 F8	3475 E7	3489 F5	3506 F4	3534 F3	3550 D2	3580 A5	3637 C5	7531 E1	9453 G2	9466 E5

9467 F5	9479 C5	9494 B6
9468 D5	9480 E5	9495 F6
9469 D5	9481 D5	9496 G7
9470 E5	9482 C5	9497 A7
9471 F5	9483 C5	9498 E8
9472 D5	9484 C5	9499 B8
9473 D5	9485 E6	9500 A8
9474 E5	9486 A6	9501 E8
9475 F5	9487 D6	9502 B8
9476 E5	9488 E6	9503 A8
9477 E5	9489 B6	9505 E1
9478 F5	9493 B6	9506 D2


1
2
3
4
5
6
7
8
A
B
C
D
E
F
G
H
Source selector
DSP part
Equaliser and Volume
Balance
Equal
Selector
EASYLINK
TUNER
CD-CASSETTE
DCC OUT
CD IN
DCC IN
AUX
PHONO
1462
1456
1458
1463
1551
1561
0056
8450
# ONLY IN FA80 /01X
PC.3104-217-00550.SERV-MAN (mirrowed chips)
3104 217 00550 FA80 .4
PC.3104-217-00550.SERV-MAN update 22-10-92

2458 G3	2687 D8	2485 E3	2534 F7	2546 D7	2559 D8	2586 A4	2602 D2	2611 B2	2622 D1	2645 B1	3502 F5	3560 E8	3578 B4
2459 G2	2688 D7	2486 F3	2536 E7	2547 E8	2560 D6	2588 A1	2603 C3	2612 C1	2623 C2	2646 A1	3503 E5	3565 F8	3582 A4
2460 B3	2828 E8	2487 F3	2537 E7	2548 E6	2575 B4	2589 C2	2604 D1	2615 C3	2624 D1	2647 B2	3504 F5	3566 F8	3583 A4
2466 E3	2830 E6	2488 G6	2538 E8	2551 E8	2576 B4	2590 C1	2605 C3	2616 D2	2629 C3	2648 A2	3505 E5	3567 F7	3584 D4
2462 E3	2832 F5	2527 F7	2539 E8	2552 E8	2577 B4	2593 B3	2606 D1	2617 C3	2630 C1	2649 B2	3507 E5	3568 F7	3603 B3
2468 B2	2875 E8	2528 F7	2540 E7	2553 F8	2578 B4	2594 C1	2607 C3	2618 D2	2631 B3	2650 B3	3509 E5	3570 E8	3604 C1
2461 B2	2478 F5	2529 F6	2541 E8	2554 F8	2579 B4	2595 A3	2608 D1	2619 C3	2632 C2	3477 E2	3536 F6	3575 B4	3606 B1
2888 E2	2481 F5	2530 F6	2542 D7	2555 F7	2580 A4	2596 A3	2609 C2	2620 D2	2633 C3	3479 E2	3540 E7	3576 B4	3607 C3
2888 E6	2482 F5	2531 F7	2545 D8	2556 E8	2585 B4	2601 C3	2610 D1	2621 C3	2634 C1	3501 E5	3559 D8	3577 B4	3608 D2



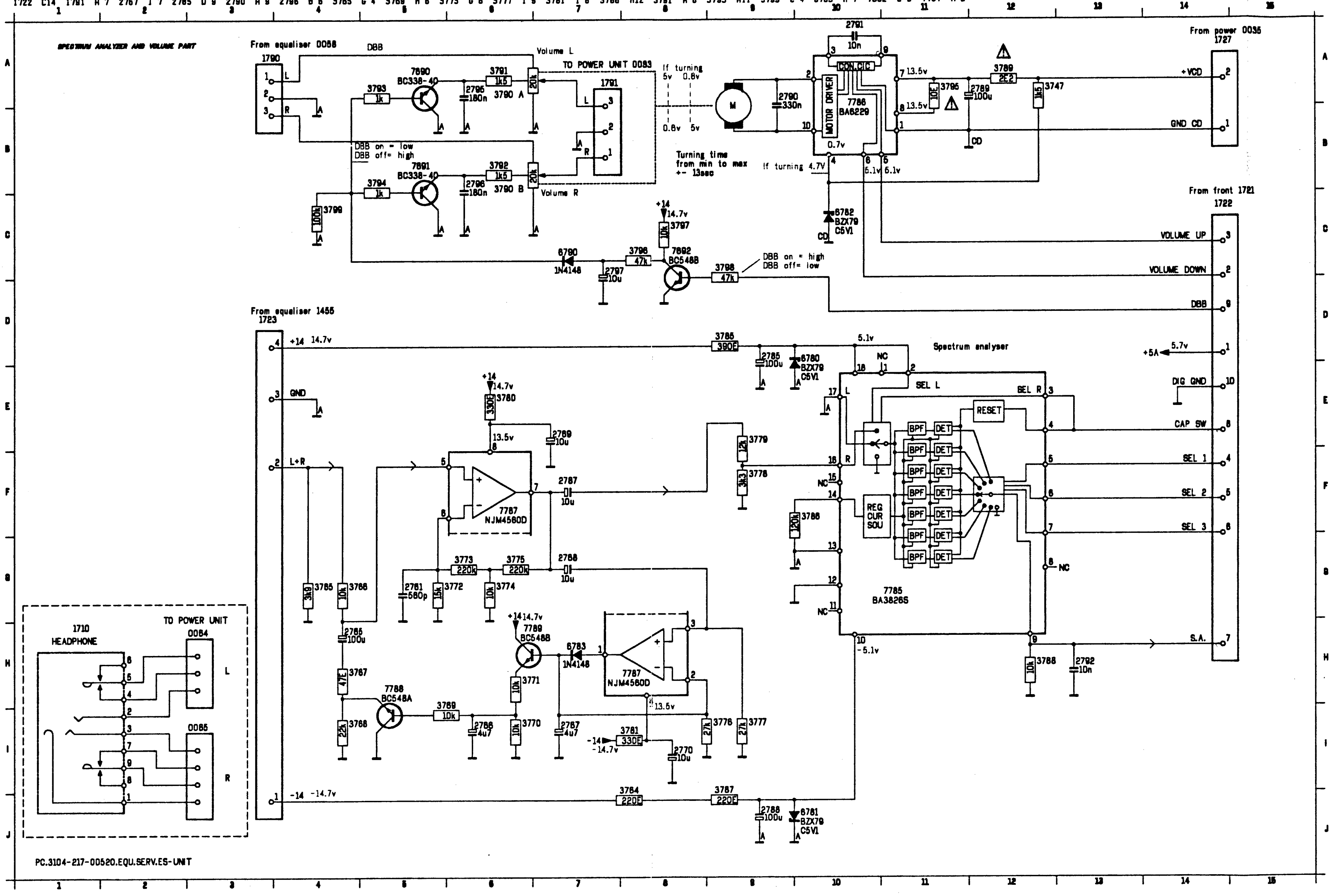
Source selector
DSP part
Equaliser and Volume

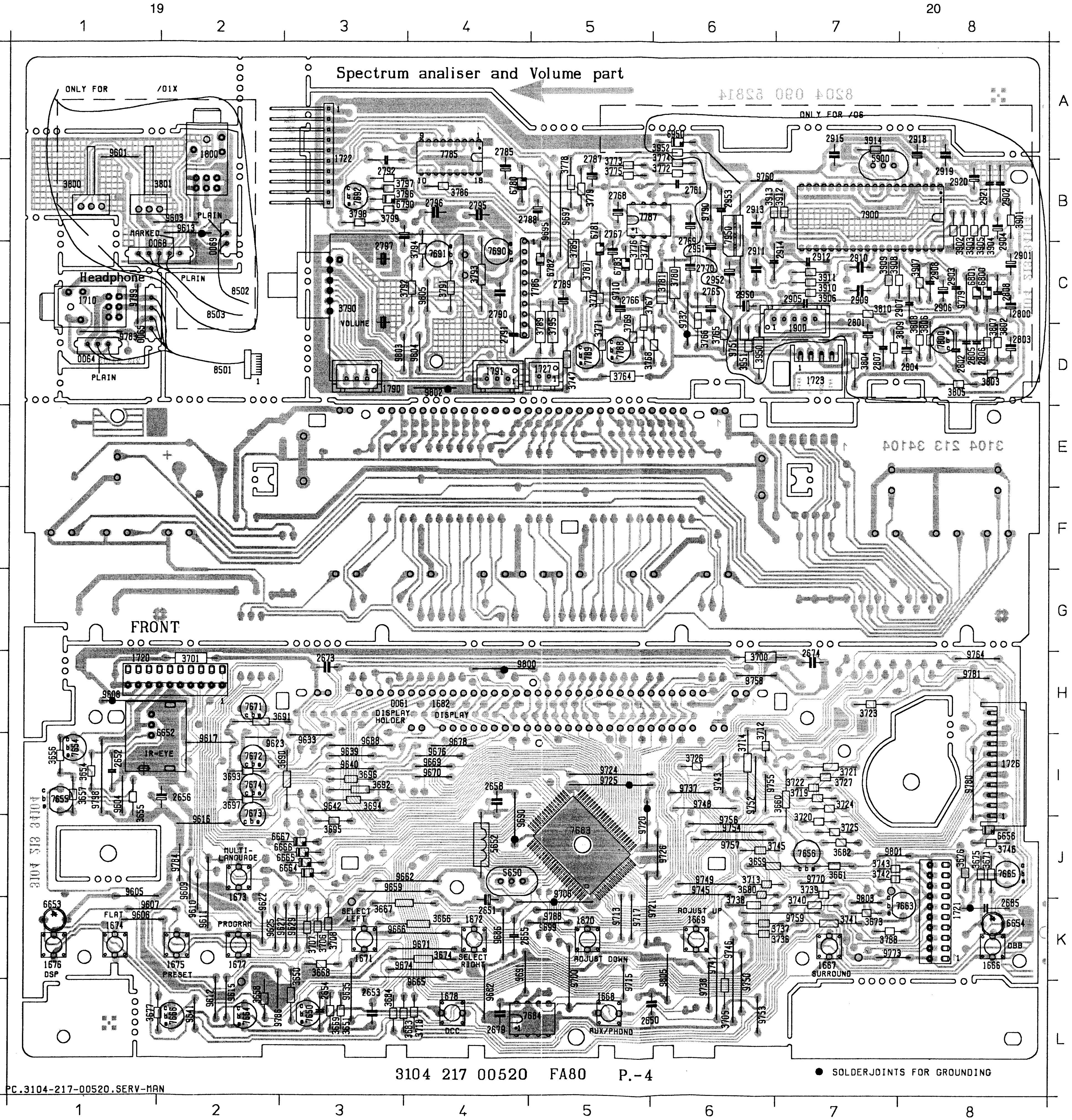
3104 217 00550 FA80 .4

ONLY IN FA80 /01X

PC.3104-217-00550.SERV-MAN

0064	H 3	1723	D 3	2761	G 5	2768	G 7	2787	F 7	2791	A10	2797	C 7	3766	G 4	3770	I 6	3774	G 6	3778	F 9	3785	D 9	3789	A12	3792	B 6	3796	C 8	6780	D 9	6790	C 7	7785	G11	7788	H 5
0065	I 3	1727	A14	2765	H 4	2769	E 7	2788	J 9	2792	H13	3747	A12	3767	H 4	3771	H 6	3775	G 6	3779	E 9	3786	F 9	3790	B 7	3793	A 5	3797	C 8	6781	J 9	7690	A 5	7786	A10	7789	H 7
1710	H 1	1790	A 3	2766	I 6	2770	I 8	2789	A11	2795	A 6	3764	I 8	3768	I 4	3772	G 5	3776	I 8	3780	E 6	3787	I 9	3790	A 7	3794	B 5	3798	C 9	6782	C10	7691	B 5	7787	F 6		
1722	C14	1791	A 7	2767	I 7	2785	D 9	2790	A 9	2796	B 6	3765	G 4	3769	H 6	3773	G 6	3777	I 9	3781	I 8	3788	H12	3791	A 6	3795	A11	3799	C 4	6783	H 7	7692	C 8	7787	H 8		


SPECTRUM ANALYZER AND VOLUME PART
From equaliser 0058
DBB
1790
Volume L
TO POWER UNIT 0083
7690
BC338-40
3791
1k5
3793
1k
2795
180n
3790 A
20k
1791
L
R
If turning
5v 0.8v
0.8v 5v
M
2790
330n
2791
10n
CON.CIC
MOTOR DRIVER
7786
BA6229
0.7v
13.5v
3795
10E
2789
100u
3789
2E2
3747
1k5
CD
From power 0035
1727
+VCD
GND CD
DBB on = low
DBB off= high
7691
BC338-40
3792
1k5
3794
1k
2796
180n
3790 B
Volume R
3799
100k
Turning time
from min to max
+- 13sec
If turning 4.7V
5.1v 5.1v
6782
BZX79
C5V1
From front 1721
1722
VOLUME UP
VOLUME DOWN
DBB
+14
14.7v
3797
10k
6790
1N4148
2797
10u
3796
47k
7692
BC548B
3798
47k
DBB on = high
DBB off= low
From equaliser 1455
1723
+14 14.7v
GND
L+R
-14 -14.7v
3785
390E
2785
100u
6780
BZX79
C5V1
5.1v
NC
Spectrum analyser
SEL L
SEL R
RESET
BPF
DET
REG
CUR
SOU
7785
BA3826S
-5.1v
NC
3779
12k
3778
3k3
3788
120k
3788
10k
2792
10n
+5A
5.7v
DIG GND
CAP SW
SEL 1
SEL 2
SEL 3
S.A.
3780
330E
13.5v
2769
10u
7787
NJM4560D
2787
10u
3773
220k
3775
220k
2788
10u
2761
560p
3772
15k
3774
10k
3765
3k9
3766
10k
2765
100u
3767
47E
7788
BC548A
3768
22k
3769
10k
2766
4u7
7789
BC548B
3771
10k
3770
10k
6783
1N4148
2767
4u7
3781
330E
-14
-14.7v
2770
10u
3776
27k
3777
27k
3764
220E
3787
220E
2788
100u
6781
BZX79
C5V1
1710
HEADPHONE
TO POWER UNIT
0064
0065
PC.3104-217-00520.EQU.SERV.ES-UNIT


19
20
1
2
3
4
5
6
7
8
A
B
C
D
E
F
G
H
I
J
K
L
Spectrum analiser and Volume part
ONLY FOR /01X
ONLY FOR /06
Headphone
MARKED
PLAIN
VOLUME
FRONT
DISPLAY HOLDER
DISPLAY
IR-EYE
MULTI-LANGUAGE
FLAT
PROGRAM
SELECT LEFT
SELECT RIGHT
ADJUST UP
ADJUST DOWN
AUX/PHONO
SURROUND
DSP
PRESET
OCC
DBB
3104 217 00520 FA80 P.-4
● SOLDERJOINTS FOR GROUNDING

PC.3104-217-00520.SERV-MAN

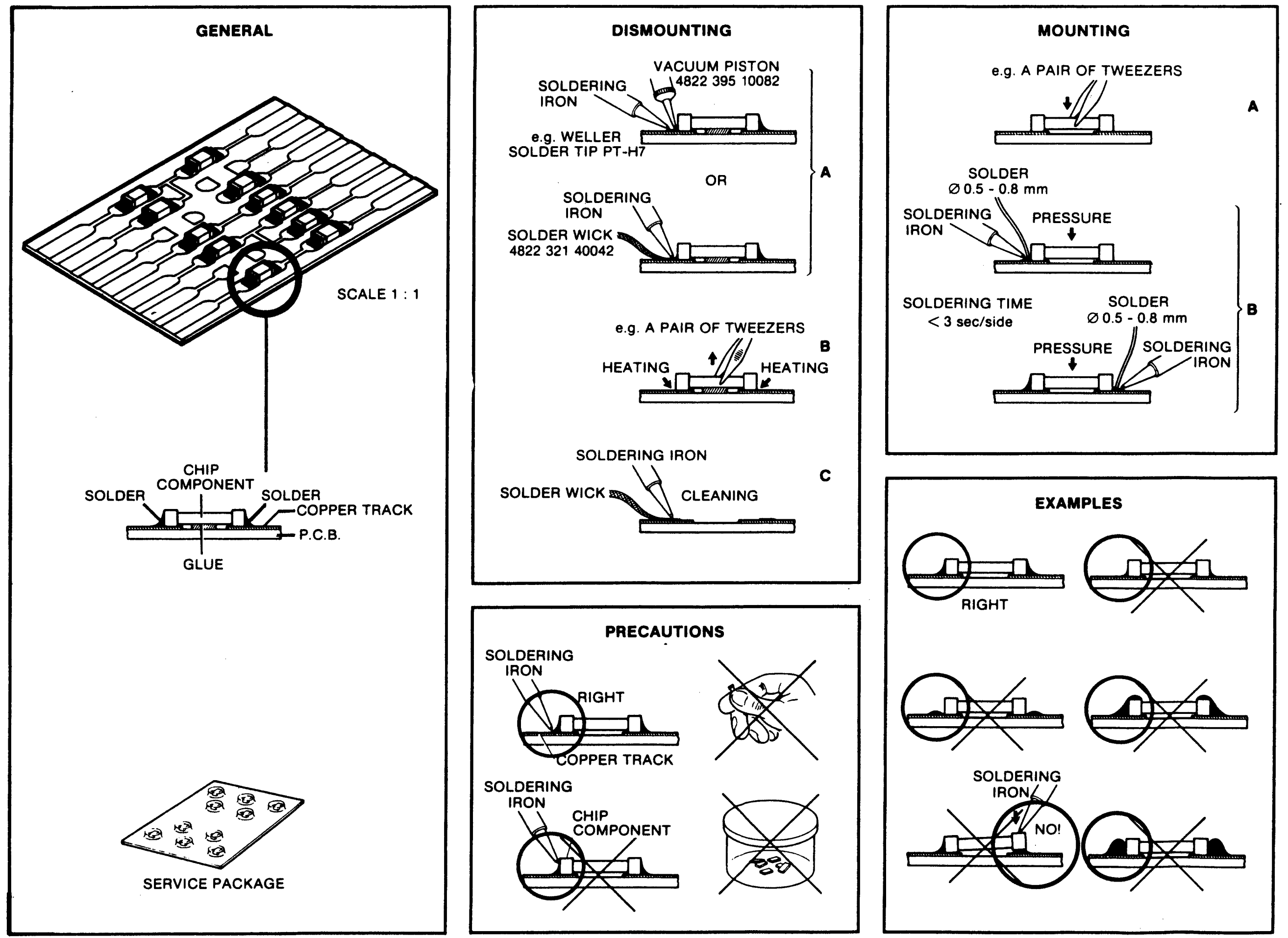
0061	H3
0064	D1
0065	D1
0068	C1
0069	C2
1666	K8
1667	K7
1668	L5
1669	K6
1670	K5
1671	K3
1672	K4
1673	K2
1674	K1
1675	K2
1676	K1
1677	K2
1678	L4
1682	H4
1710	C1
1720	H1
1721	K8
1722	B3
1723	D7
1726	I 8
1727	D5
1790	D3
1791	D4
1800	A2
1900	D7
2650	L6
2651	K4
2652	I 1
2653	L3
2654	L3
2655	K4
2656	I 2
2658	I 4
2673	H3
2674	H7
2679	L4
2685	K8
2761	B6
2765	C6
2766	C5
2767	B5
2768	B5
2769	C6
2770	C6
2785	A4
2787	B5
2788	B4
2789	C5
2790	C4
2791	D4
2792	B3
2795	B4
2796	B4
2797	C3
2800	C8
2801	D7
2802	D8
2803	D8
2804	D8
2805	D8
2806	D8
2807	D7
2808	C8
2901	C8
2902	B8
2903	C8
2904	B8
2905	C7
2906	C8
2907	C8
2908	C8
2909	C7
2910	C7
2911	C6
2912	C7
2913	B6
2914	C7
2915	A7
2918	A8
2919	B8
2920	B8
2921	B8
2950	C6
2951	C6
2952	C6
2953	B6
3650	K3
3651	L3
3654	I 1
3655	I 1
3656	I 1
3657	I 1
3658	L2
3659	J6
3660	I 7
3661	J7
3666	K4
3667	K3
3668	K3
3669	L3
3671	J8
3673	K7
3674	K4
3675	J8
3676	J8
3677	L1
3680	J6
3682	J7
3683	L4
3684	L3
3690	I 3
3691	H3
3692	I 3
3693	I 2
3694	I 3
3695	J3
3696	I 3
3697	I 2
3700	H6
3701	H2
3705	L6
3706	K3
3707	K3
3708	K3
3712	H6
3713	J6
3714	I 6
3718	L4
3719	I 7
3720	J7
3721	I 7
3722	I 7
3723	H7
3724	I 7
3725	J7
3726	I 6
3727	I 7
3736	K7
3737	K7
3738	K6
3739	J7
3740	K7
3741	K7
3742	J7
3743	J7
3745	J7
3746	J8
3747	D5
3764	D5
3765	D6
3766	D6
3767	C5
3768	D5
3769	C5
3770	C5
3771	D5
3772	B6
3773	B5
3774	B6
3775	B5
3776	C5
3777	C5
3778	B5
3779	B5
3780	C6
3781	C6
3785	C5
3786	B4
3787	C5
3788	K7
3789	D5
3790	C3
3791	C4
3792	C3
3793	C4
3794	C4
3795	D5
3796	B3
3797	B3
3798	B3
3799	B3
3800	B1
3801	B2
3802	D8
3803	D8
3804	D7
3805	D8
3806	D8
3807	D8
3808	D8
3809	D8
3810	C7
3901	B8
3902	C8
3903	C8
3904	C8
3905	C8
3906	C7
3907	C8
3908	C7
3909	C7
3910	C7
3911	C7
3912	B7
3913	B6
3914	A7
3950	D6
3951	D6
3952	A6
5650	J4
5652	J4
5900	B7
6652	I 2
6653	K1
6654	K8
6656	J8
6664	J3
6665	J3
6666	J3
6667	J3
6780	B4
6781	B5
6782	C5
6783	C5
6790	B3
6800	C8
6801	C8
6950	A6
7650	L3
7654	I 1
7655	I 1
7656	J7
7663	K8
7664	L2
7665	J8
7666	L2
7671	H2
7672	I 2
7673	J2
7674	I 2
7684	L5
7690	C4
7691	C4
7692	B3
7785	A4
7786	C5
7787	B5
7788	D5
7789	D5
7800	D8
7900	B7
7950	B6
8501	D2
8502	C2
8503	C2
9601	A1
9603	B2
9604	I 1
9605	J1
9606	K1
9607	K1
9608	H1
9609	J2
9610	K2
9611	K2
9612	L2
9613	B2
9615	L2
9616	J2
9617	I 2
9622	K2
9623	I 2
9625	K2
9627	K3
9629	K3
9633	I 3
9635	L3
9639	I 3
9640	I 3
9641	L2
9642	I 3
9659	J3
9662	J4
9665	L4
9666	K3
9669	I 4
9670	I 4
9671	K4
9674	K4
9676	I 4
9678	I 4
9682	L4
9686	K4
9688	I 3
9690	J4
9691	K4
9695	B5
9697	B5
9699	K5
9700	K5
9706	J5
9710	C5
9713	K5
9715	L5
9717	K5
9720	J5
9721	K6
9724	I 5
9725	I 5
9726	J6
9732	C6
9737	I 6
9738	L6
9741	K6
9743	I 6
9745	J6
9746	K6
9748	I 6
9749	J6
9750	L6
9751	D6
9752	I 6
9753	L6
9754	J6
9755	I 6
9756	J6
9757	J6
9758	H6
9759	K7
9760	B8
9764	H8
9770	J7
9773	K7
9779	C8
9780	I 8
9781	H8
9783	D1
9784	J2
9786	L3
9788	K5
9790	B6
9798	I 1
9799	C1
9800	H4
9801	J7
9802	D4
9803	D3
9803	K7
9804	D4
9805	C4
9805	K6

Quiescent Current

SK.... SWITCH	SIGNAL	TO	VOLUME	ADJUST	OSILLOSCOPE	D.C.METER INDICATOR
STAND - BY				L ch R 3285		L ch. ◇1 ◇2 DC 8 mV
				R ch. R 3284		R ch. ◇3 ◇4 DC 8 mV

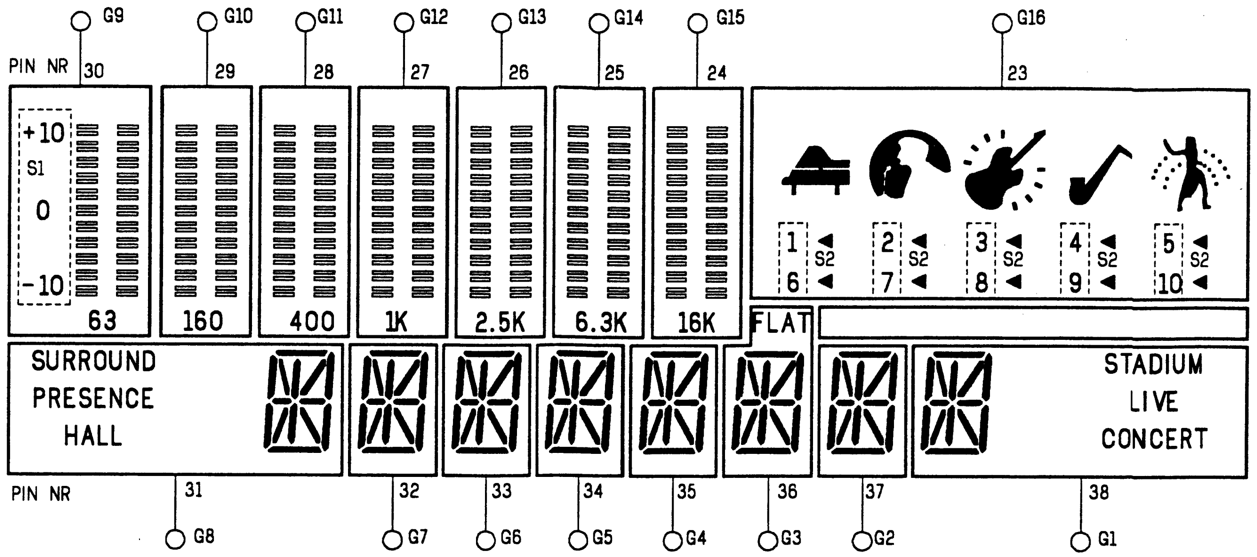
- Check for good thermal contact between power transistor and heatsink.
- Mains Voltage 220V /00 240V /05 5%
- Ambient themperature =20° 5° and heatsink must be atambient temperature.

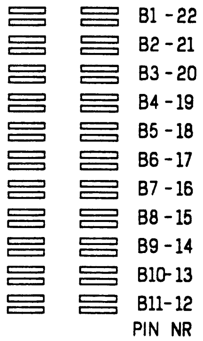
- Place the set on stand-by position.
- Trimpotmeter in clock wise position.
- The adjustment must be finished for both channels 20sec after power on.

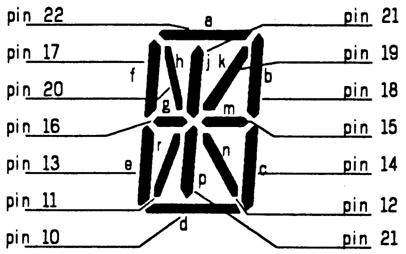

GENERAL
SCALE 1 : 1
CHIP COMPONENT
SOLDER
SOLDER
COPPER TRACK
P.C.B.
GLUE
SERVICE PACKAGE
DISMOUNTING
VACUUM PISTON 4822 395 10082
SOLDERING IRON
e.g. WELLER SOLDER TIP PT-H7
OR
SOLDERING IRON
SOLDER WICK 4822 321 40042
A
e.g. A PAIR OF TWEEZERS
B
HEATING
HEATING
SOLDERING IRON
SOLDER WICK
CLEANING
C
PRECAUTIONS
SOLDERING IRON
RIGHT
COPPER TRACK
SOLDERING IRON
CHIP COMPONENT
MOUNTING
e.g. A PAIR OF TWEEZERS
A
SOLDER ∅ 0.5 - 0.8 mm
SOLDERING IRON
PRESSURE
SOLDERING TIME < 3 sec/side
SOLDER ∅ 0.5 - 0.8 mm
PRESSURE
SOLDERING IRON
B
EXAMPLES
RIGHT
SOLDERING IRON
NO!

27 012C12

GRID ASSIGMENT


G9
G10
G11
G12
G13
G14
G15
G16
PIN NR
30
29
28
27
26
25
24
23
+10
S1
0
-10
63
160
400
1K
2.5K
6.3K
16K
FLAT
1 S2 6
2 S2 7
3 S2 8
4 S2 9
5 S2 10
SURROUND
PRESENCE
HALL
STADIUM
LIVE
CONCERT
PIN NR
31
32
33
34
35
36
37
38
G8
G7
G6
G5
G4
G3
G2
G1


B1 - 22
B2 - 21
B3 - 20
B4 - 19
B5 - 18
B6 - 17
B7 - 16
B8 - 15
B9 - 14
B10-13
B11-12
PIN NR


pin 22
pin 17
pin 20
pin 16
pin 13
pin 11
pin 10
pin 21
pin 19
pin 18
pin 15
pin 14
pin 12
pin 21
a
h
j
k
f
b
g
m
r
n
e
p
c
d

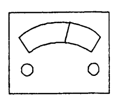
PIN CONNECTION

PIN NR	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01
CONNECTION	F2	F2	NP	NP	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	11G	12G	13G	14G	15G	16G	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	NC	NC	NP	NP	F1	F1

F1,F2-FILEMENT NP = NO PIN NC = NO CONNECTION 1G→16G = GRID

ANODE CONNECTION

	16G	15G	14G	13G	12G	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
P1	S1	B1	B1	B1	B1	B1	B1	B1	a	a	a	a	a	a	a	a
P2	◁(1)	B2	B2	B2	B2	B2	B2	B2	j.p	j.p	j.p	j.p	j.p	j.p	j.p	j.p
P3	◁(2)	B3	B3	B3	B3	B3	B3	B3	h	h	h	h	h	h	h	h
P4	◁(3)	B4	B4	B4	B4	B4	B4	B4	k	k	k	k	k	k	k	k
P5	◁(4)	B5	B5	B5	B5	B5	B5	B5	b	b	b	b	b	b	b	b
P6	◁(5)	B6	B6	B6	B6	B6	B6	B6	f	f	f	f	f	f	f	f
P7	◁(6)	B7	B7	B7	B7	B7	B7	B7	g	g	g	g	g	g	g	g
P8	◁(7)	B8	B8	B8	B8	B8	B8	B8	m	m	m	m	m	m	m	m
P9	◁(8)	B9	B9	B9	B9	B9	B9	B9	c	c	c	c	c	c	c	c
P10	◁(9)	B10	B10	B10	B10	B10	B10	B10	e	e	e	e	e	e	e	e
P11	◁(10)	B11	B11	B11	B11	B11	B11	B11	n	n	n	n	n	n	n	n
P12	🎹	-	-	-	-	-	-	-	r	r	r	r	r	r	r	r
P13	🎤	16K	6.3K	2.5K	1K	400	160	63	d	d	d	d	d	d	d	d
P14	🎸	-	-	-	-	-	-	-	SURROUND	-	-	-	-	FLAT	-	STADION
P15	🎷	-	-	-	-	-	-	-	PRESENCE	-	-	-	-	-	-	LIVE
P16	💃	-	-	-	-	-	-	-	HALL	-	-	-	-	-	-	CONCERT



D.C.METER INDICATOR

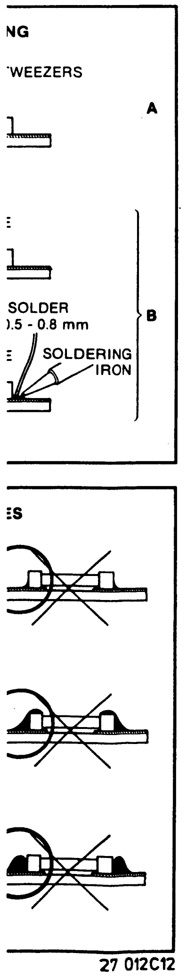
L ch.

DC 8 mV

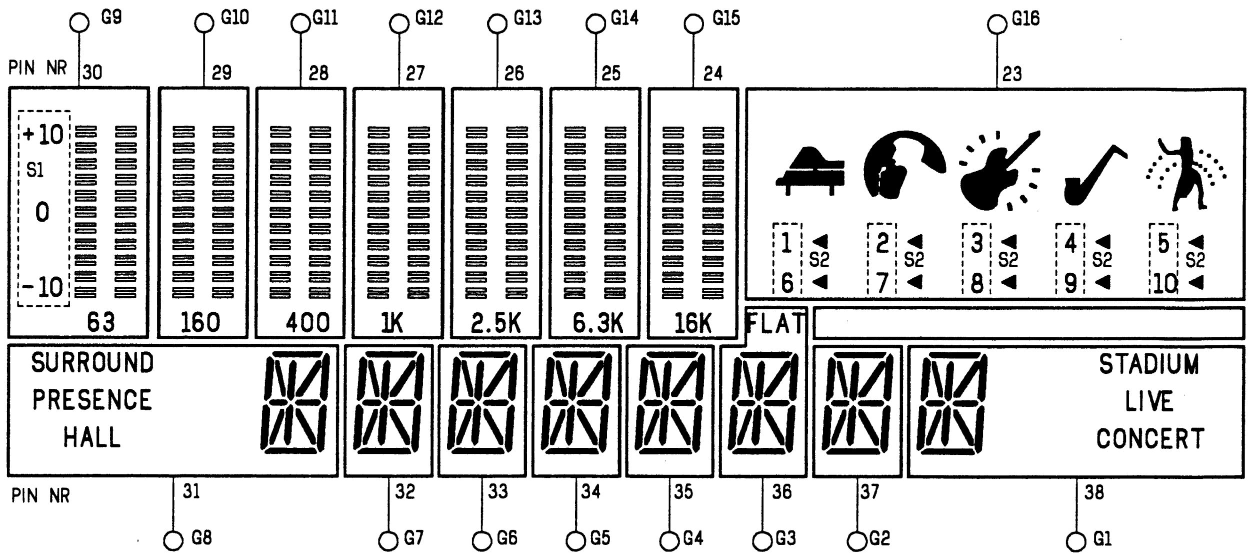
R ch.

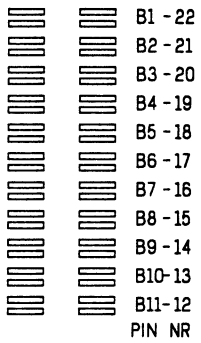
DC 8 mV

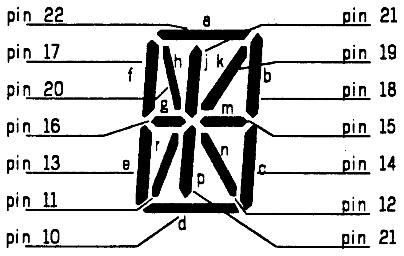
both channels



GRID ASSIGMENT







PIN CONNECTION

PIN NR	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01
CONNECTION	F2	F2	NP	NP	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	11G	12G	13G	14G	15G	16G	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	NC	NC	NP	NP	F1	F1

F1.F2-FILEMENT NP = NO PIN NC = NO CONNECTION 1G→16G = GRID

ANODE CONNECTION

	16G	15G	14G	13G	12G	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
P1	S1	B1	B1	B1	B1	B1	B1	B1	a	a	a	a	a	a	a	a
P2	◁(1)	B2	B2	B2	B2	B2	B2	B2	j.p	j.p	j.p	j.p	j.p	j.p	j.p	j.p
P3	◁(2)	B3	B3	B3	B3	B3	B3	B3	h	h	h	h	h	h	h	h
P4	◁(3)	B4	B4	B4	B4	B4	B4	B4	k	k	k	k	k	k	k	k
P5	◁(4)	B5	B5	B5	B5	B5	B5	B5	b	b	b	b	b	b	b	b
P6	◁(5)	B6	B6	B6	B6	B6	B6	B6	f	f	f	f	f	f	f	f
P7	◁(6)	B7	B7	B7	B7	B7	B7	B7	g	g	g	g	g	g	g	g
P8	◁(7)	B8	B8	B8	B8	B8	B8	B8	m	m	m	m	m	m	m	m
P9	◁(8)	B9	B9	B9	B9	B9	B9	B9	c	c	c	c	c	c	c	c
P10	◁(9)	B10	B10	B10	B10	B10	B10	B10	e	e	e	e	e	e	e	e
P11	◁(10)	B11	B11	B11	B11	B11	B11	B11	n	n	n	n	n	n	n	n
P12	🎹	-	-	-	-	-	-	-	r	r	r	r	r	r	r	r
P13	🎧	16K	6.3K	2.5K	1K	400	160	63	d	d	d	d	d	d	d	d
P14	🎸	-	-	-	-	-	-	-	SURROUND	-	-	-	-	FLAT	-	STADION
P15	🎷	-	-	-	-	-	-	-	PRESENCE	-	-	-	-	-	-	LIVE
P16	💃	-	-	-	-	-	-	-	HALL	-	-	-	-	-	-	CONCERT

GB

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.

NL

Veiligheidsbepalingen vereisen dat het apparaat in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde worden toegepast.

D

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Originalzustand des Geräts darf nicht verändert werden für Reparaturen sind Original-Ersatzteile zu verwenden.

I

Le norme di sicurezza esigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambiago identici a quelli specificati.

F

Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utilisées les pieces de rechange identiques à celles spécifiées.

Pour votre sécurité, ces documents doivent etre utilisés par des specialistes agrées, seuls habilités à réparer votre appareil en panne.

WARNINGS

GB WARNING

All ICs and many other semi conductors are susceptible to electrostatic discharges (ESD).
Careless handling during repair can reduce life drastically. When reparing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance. Keep components and tools also at this potential.

NL WAARSCHUWING

Alle ICs en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD)
Onzorgvuldig behandelen tijden reparatie kan de levensduur drastisch doen verminderen. Zorg ervoor dat U tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.
Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

D WARNUNG

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber electrostatischen Entladungen (ESD).
Unsorgfältige Behandlung im Reparaturfall kan die Lebensdauer drastisch reduzieren. Veranlassen Sie, dass Sie im Reparaturfall über ein Pulsarmband mit Widerstand verbunden sind mit dem gleichen Potential wie die Masse des Gerätes.
Bauteile und Hilfsmittel auch auf dieses gleiche Potential halten.

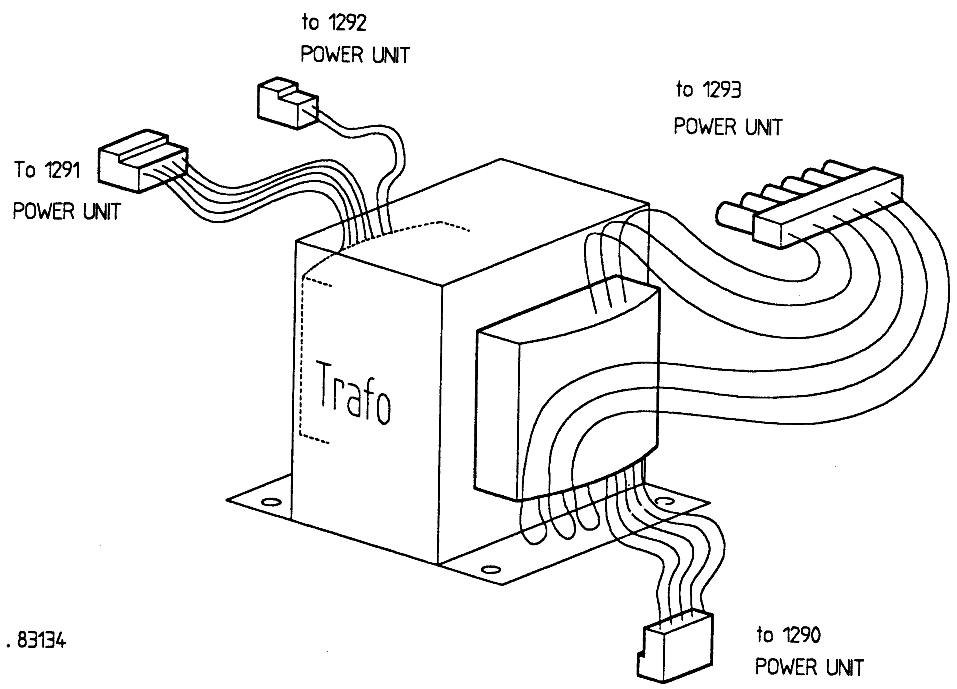
F ATTENTION

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD).
Leur longévité pourrair étre considérablement écourtée par le fait qu'aucune precaution n'est prise à leur manipulation.
Lors de réparations, s'assurer de bien étre relié au meme potentiel que la masse de l'appareil et enfiler le bracelet serti d'une résistance de sécurité.
Veiller á ce que les composants ainsi que les outils que l'on utilise soient également á ce potentiel.

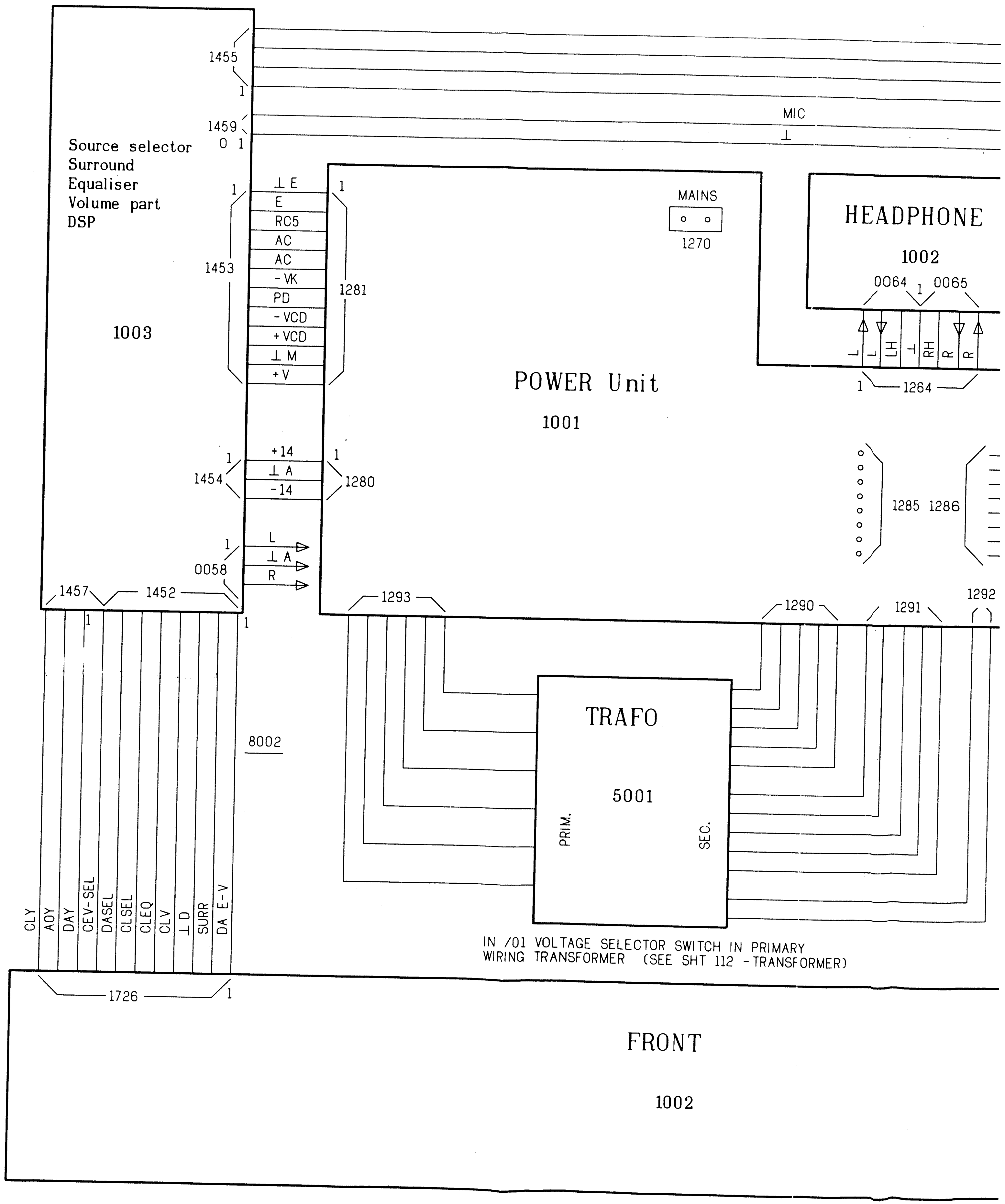
I AVERTIMENTO

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche. (ESD)
La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione. Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell apparecchio tramite un braccialetto a resistenza.
Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

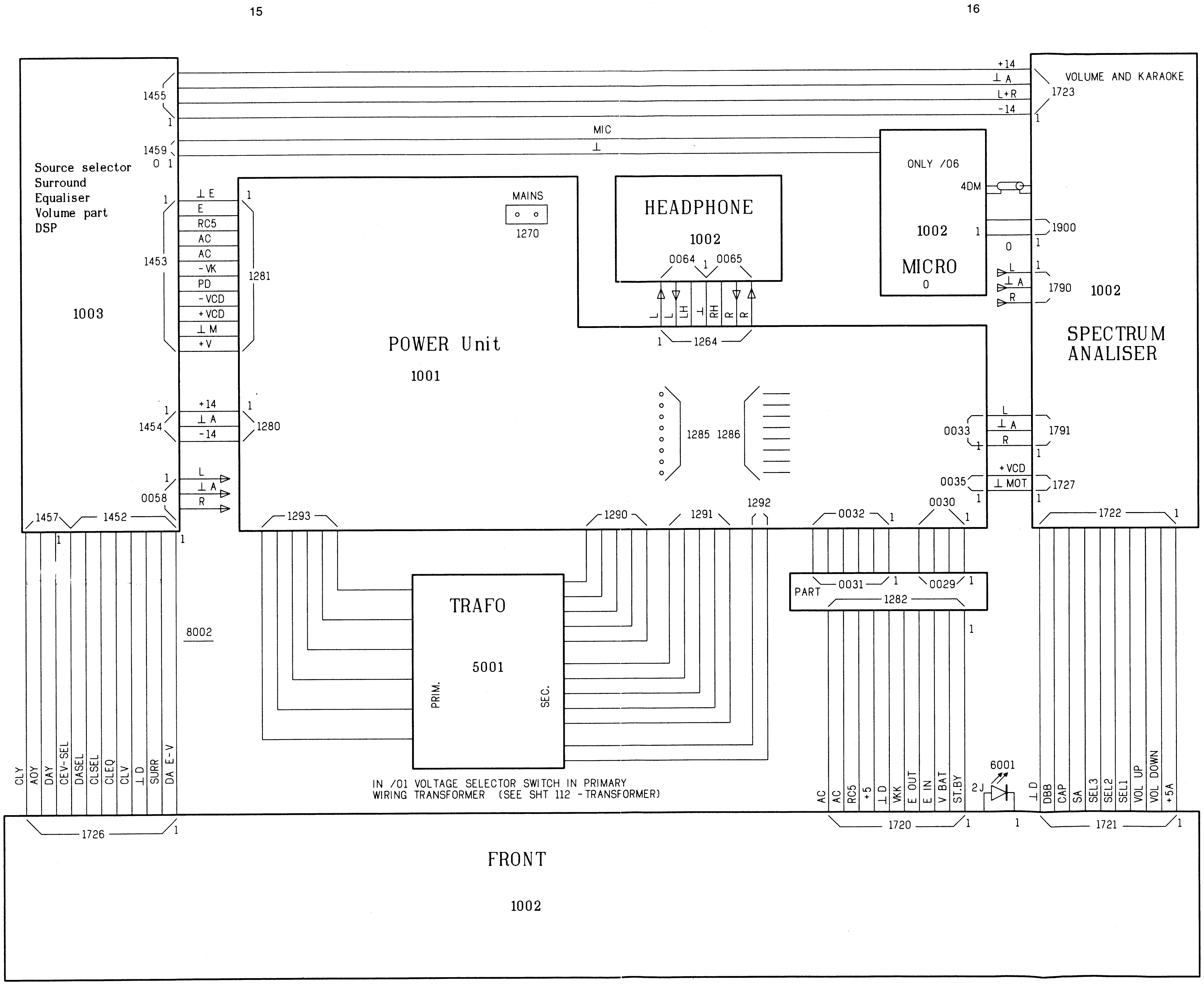
MAINS TRAFO DIAGRAM


to 1292
POWER UNIT
to 1293
POWER UNIT
To 1291
POWER UNIT
Trafo
to 1290
POWER UNIT

EVA . 83134

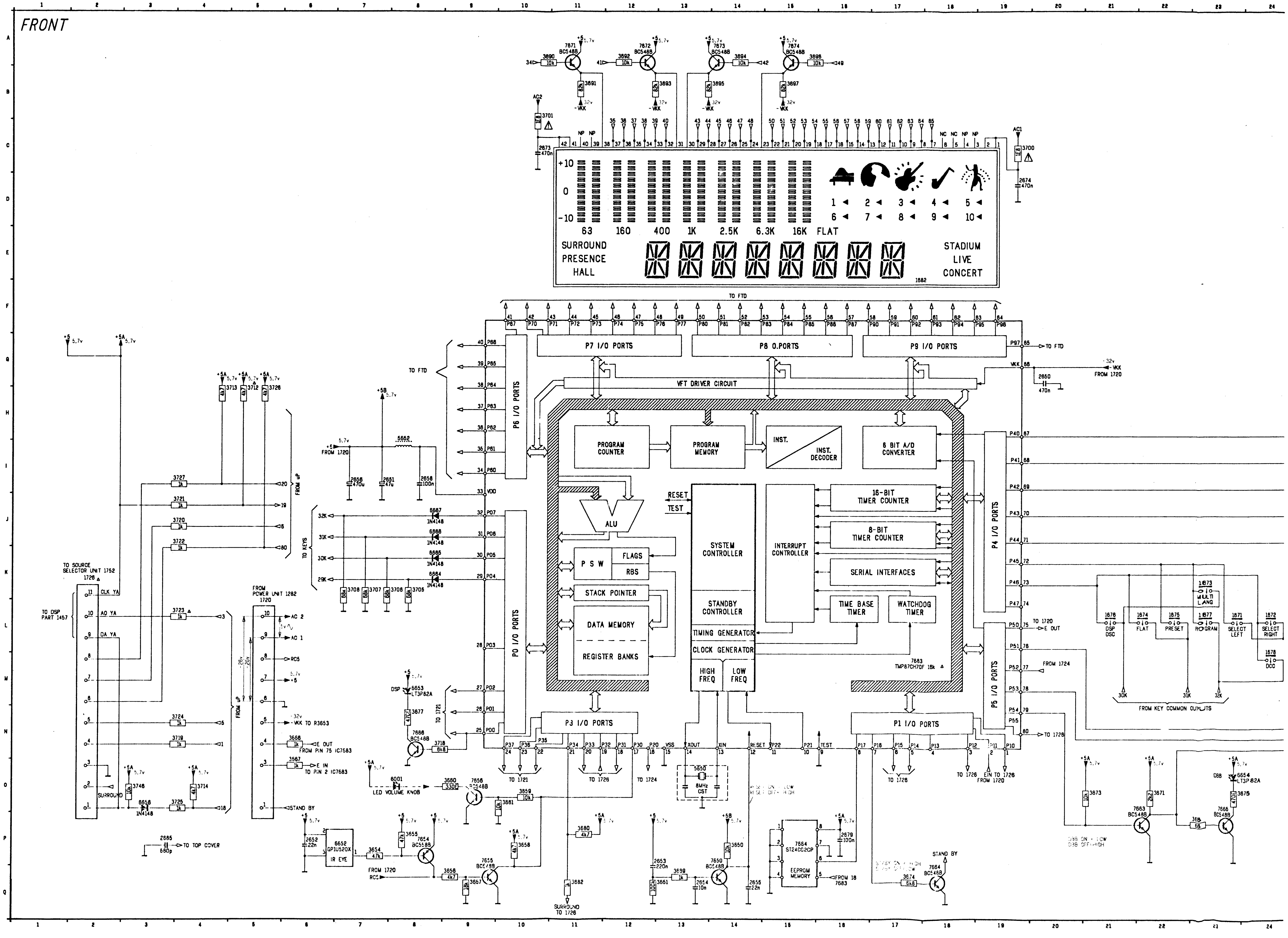

1455
1
1459
0 1
MIC
⊥
Source selector
Surround
Equaliser
Volume part
DSP
1003
1453
1
⊥ E
E
RC5
AC
AC
- VK
PD
- VCD
+ VCD
⊥ M
+ V
1281
1
MAINS
1270
HEADPHONE
1002
0064
1
0065
L
L
LH
⊥
RH
R
R
1
1264
POWER Unit
1001
1454
1
+14
⊥ A
-14
1280
1
1285 1286
0058
1
L
⊥ A
R
1457
1452
1
1
1293
1290
1291
1292
8002
TRAFO
5001
PRIM.
SEC.
CLY
AOY
DAY
CEV-SEL
DASEL
CLSEL
CLEQ
CLV
⊥ D
SURR
DA E-V
1726
1
IN /01 VOLTAGE SELECTOR SWITCH IN PRIMARY
WIRING TRANSFORMER (SEE SHT 112 - TRANSFORMER)
FRONT
1002

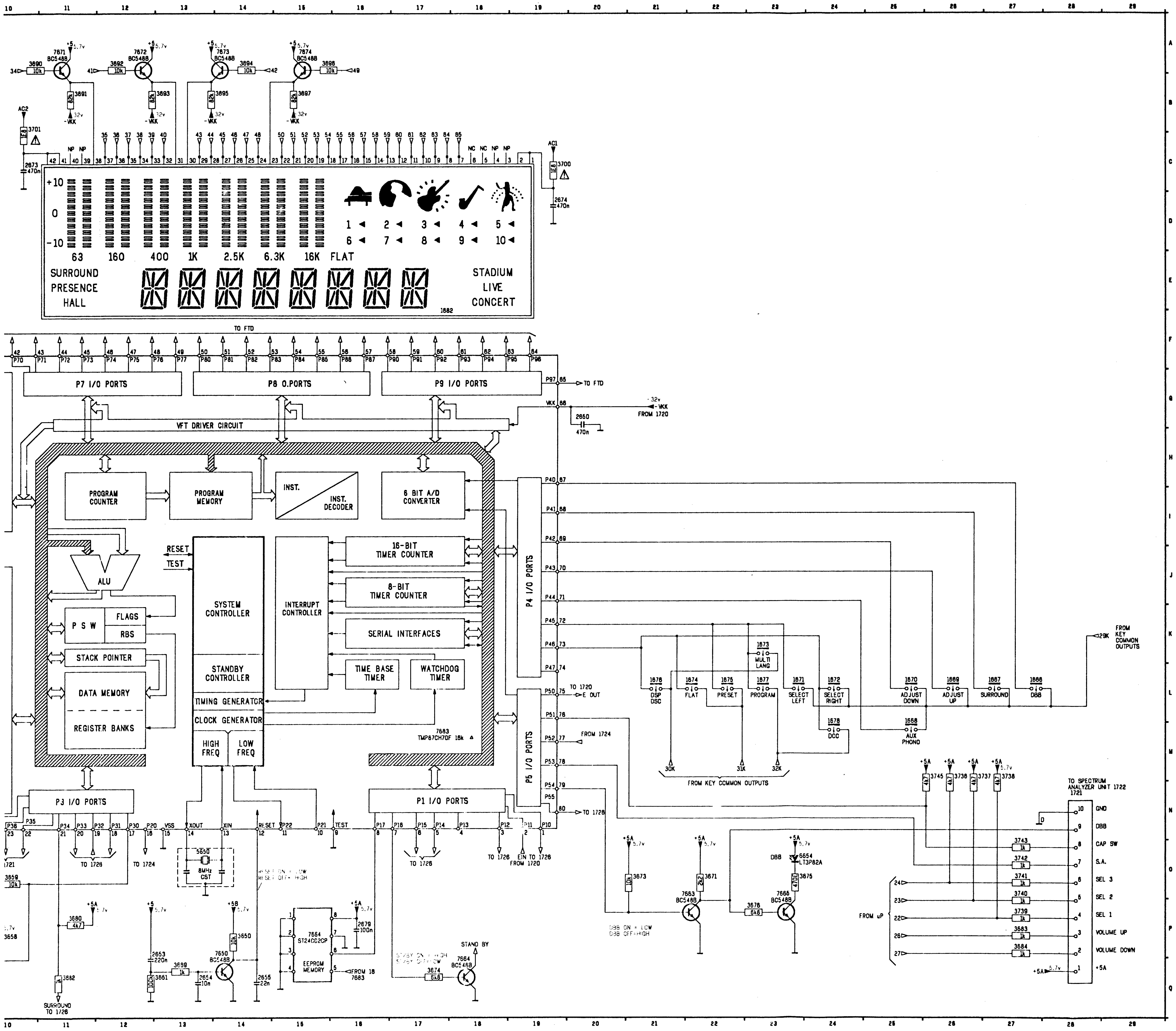
△ ONLY FA80
O ONLY FA80/06


15
16
Source selector
Surround
Equaliser
Volume part
DSP
1003
1455
1459
1453
1454
0058
1457
1452
8002
⊥ E
E
RC5
AC
AC
- VK
PD
- VCD
+ VCD
⊥ M
+ V
1281
POWER Unit
1001
MAINS
1270
+14
⊥ A
-14
1280
L
⊥ A
R
1293
1290
1291
1292
1285
1286
HEADPHONE
1002
0064
0065
L
L
LH
⊥
RH
R
R
1264
MIC
⊥
ONLY /06
4DM
1002
MICRO
0
1900
1790
L
⊥ A
R
+14
⊥ A
L+R
-14
VOLUME AND KARAOKE
1723
1002
SPECTRUM
ANALISER
0033
L
⊥ A
R
1791
0035
+ VCD
⊥ MOT
1727
0032
0030
1722
PART
0031
0029
1282
TRAFO
5001
PRIM.
SEC.
CLY
AOY
DAY
CEV-SEL
DASEL
CLSEL
CLEQ
CLV
⊥ D
SURR
DA E-V
1726
AC
AC
RC5
+5
⊥ D
VKK
E OUT
E IN
V BAT
ST.BY
1720
6001
2J
⊥ D
DBB
CAP
SA
SEL3
SEL2
SEL1
VOL UP
VOL DOWN
+5A
1721
FRONT
1002

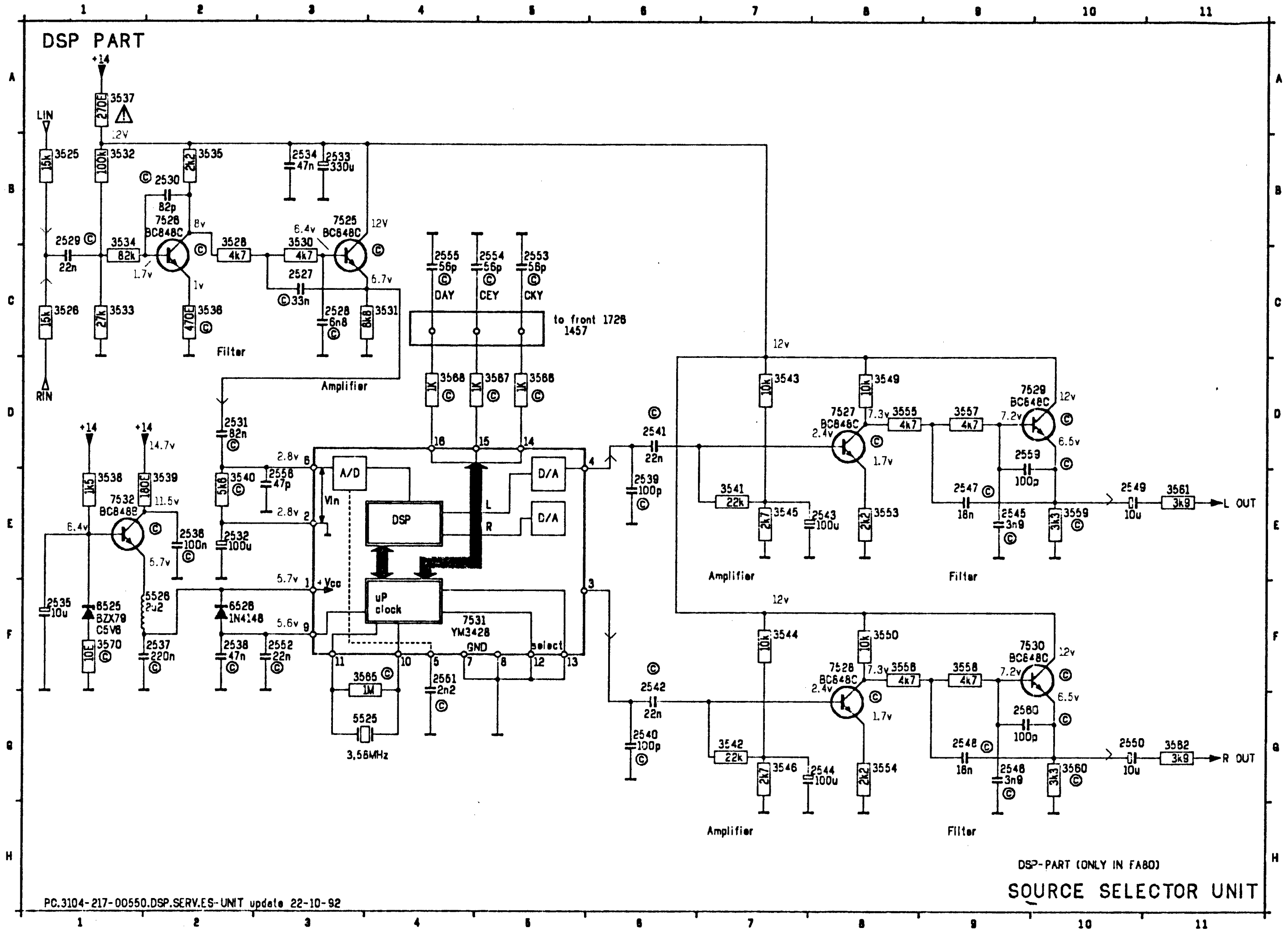
IN /01 VOLTAGE SELECTOR SWITCH IN PRIMARY
WIRING TRANSFORMER (SEE SHT 112 - TRANSFORMER)

△ ONLY FA80
O ONLY FA80/06

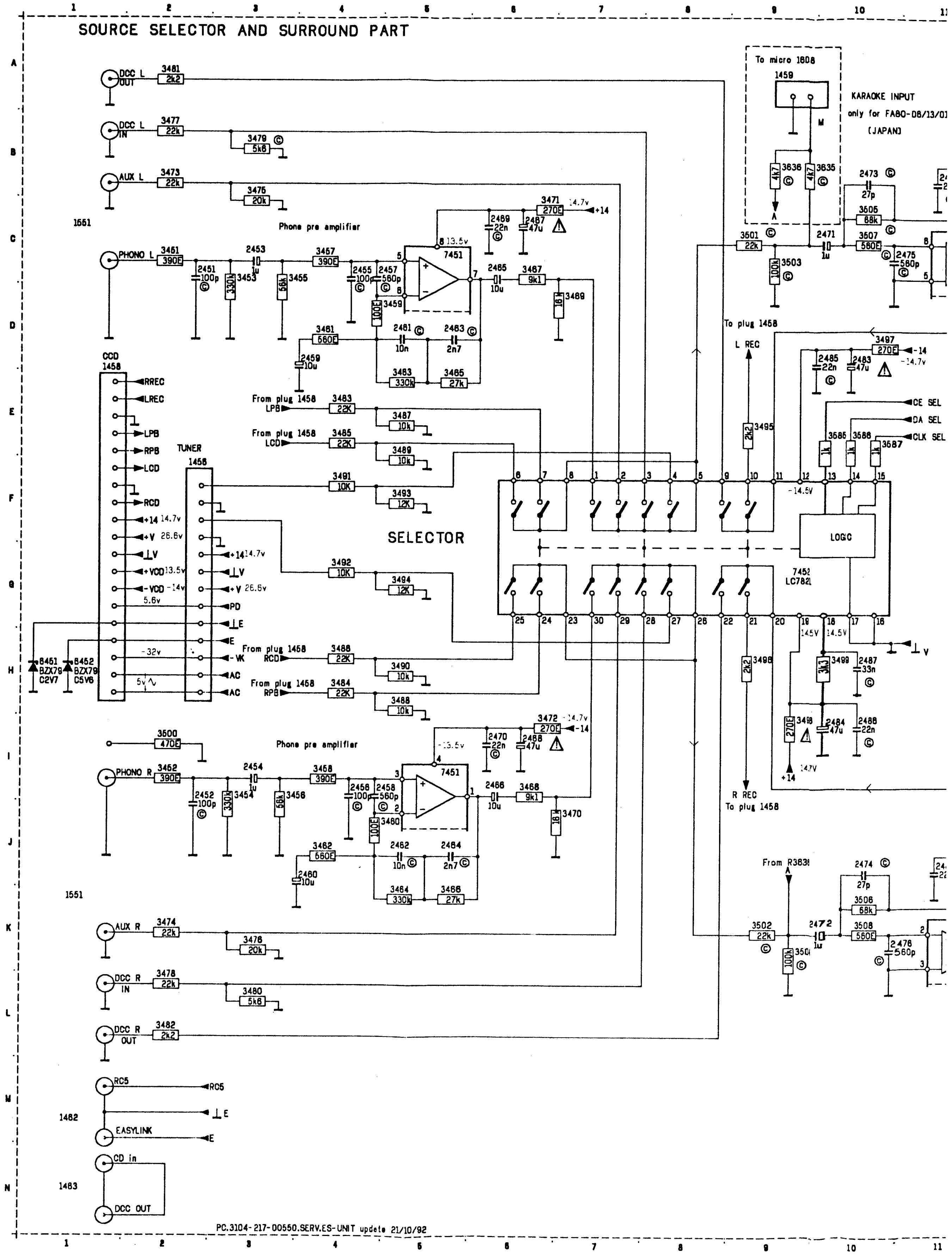

FRONT
TO FTD
P7 I/O PORTS
P8 O.PORTS
P9 I/O PORTS
VFT DRIVER CIRCUIT
P6 I/O PORTS
PROGRAM COUNTER
PROGRAM MEMORY
INST. INST. DECODER
8 BIT A/D CONVERTER
RESET
TEST
ALU
SYSTEM CONTROLLER
INTERRUPT CONTROLLER
16-BIT TIMER COUNTER
8-BIT TIMER COUNTER
SERIAL INTERFACES
P S W
FLAGS
RBS
STACK POINTER
DATA MEMORY
REGISTER BANKS
STANDBY CONTROLLER
TIMING GENERATOR
CLOCK GENERATOR
HIGH FREQ
LOW FREQ
TIME BASE TIMER
WATCHDOG TIMER
P4 I/O PORTS
P5 I/O PORTS
P0 I/O PORTS
P3 I/O PORTS
P1 I/O PORTS
7683 TMP87CH70F 16k
63 160 400 1K 2.5K 6.3K 16K FLAT
+10 0 -10
SURROUND PRESENCE HALL
STADIUM LIVE CONCERT
1882
TO SOURCE SELECTOR UNIT 1752 1726
TO DSP PART 1457
CLK YA
A0 YA
DA YA
SURROUND
FROM POWER UNIT 1282 1720
AC 2
AC 1
RC5
-VKK TO R3653
E OUT FROM PIN 75 IC7683
E IN TO PIN 2 IC7683
STAND BY
FROM uP
TO KEYS
32K 31K 30K 29K
1N4148
DSP 6653 LT3P82A
7686 BC548B
LED VOLUME KNOB
6652 GP1U520X IR EYE
FROM 1720 RC5
7654 BC548B
7655 BC548B
7656 BC548B
7650 BC548B
5650 8MHz CST
7664 ST24C02CP EEPROM MEMORY
FROM 18 7683
STAND BY
7664 BC548B
SURROUND TO 1726
TO 1721
TO 1726
TO 1724
TO 1726 EIN TO 1726 FROM 1720
TO 1720 E OUT
FROM 1724
-32v -VKK FROM 1720
2685 680p TO TOP COVER
1876 DSP OSC
1874 FLAT
1875 PRESET
1877 PROGRAM
1873 MULTI LANG
1871 SELECT LEFT
1872 SELECT RIGHT
1878 DCC
FROM KEY COMMON OUPUTS
D88
6654 LT3P82A
7663 BC548B
7666 BC548B
AC1 3700
AC2 3701


7671 BC548B
7672 BC548B
7673 BC548B
7674 BC548B
3690 10k
3692 10k
3694 10k
3698 10k
3691
3693
3695
3697
+5 5,7v
32v
-VKK
AC2
3701
2673 470n
NP NP
NC NC NP NP
AC1
3700
2674 470n
+10
0
-10
63
160
400
1K
2.5K
6.3K
16K
FLAT
1 ◄ 2 ◄ 3 ◄ 4 ◄ 5 ◄
6 ◄ 7 ◄ 8 ◄ 9 ◄ 10◄
SURROUND
PRESENCE
HALL
STADIUM
LIVE
CONCERT
1682
TO FTD
P7 I/O PORTS
P8 O.PORTS
P9 I/O PORTS
TO FTD
-32v
-VKK
FROM 1720
2650
470n
VFT DRIVER CIRCUIT
PROGRAM COUNTER
PROGRAM MEMORY
INST.
INST. DECODER
6 BIT A/D CONVERTER
RESET
TEST
ALU
SYSTEM CONTROLLER
INTERRUPT CONTROLLER
16-BIT TIMER COUNTER
8-BIT TIMER COUNTER
SERIAL INTERFACES
P S W
FLAGS
RBS
STACK POINTER
DATA MEMORY
REGISTER BANKS
STANDBY CONTROLLER
TIMING GENERATOR
CLOCK GENERATOR
HIGH FREQ
LOW FREQ
TIME BASE TIMER
WATCHDOG TIMER
7683
TMP87CH70F 16k
P4 I/O PORTS
P5 I/O PORTS
P3 I/O PORTS
P1 I/O PORTS
TO 1720
E OUT
FROM 1724
TO 1728
FROM KEY COMMON OUTPUTS
1676 DSP DSC
1674 FLAT
1675 PRESET
1677 PROGRAM
1673 MULTI LANG
1671 SELECT LEFT
1672 SELECT RIGHT
1678 DCC
1670 ADJUST DOWN
1669 ADJUST UP
1667 SURROUND
1666 DBB
1668 AUX PHONO
30K
31K
32K
FROM KEY COMMON OUTPUTS
TO 1726
TO 1724
TO 1726
TO 1726
EIN TO 1728
FROM 1720
5650
8MHz CST
RESET ON = LOW
RESET OFF = HIGH
3659 10k
3680 4k7
3658
3682
SURROUND TO 1726
2653 220n
3699 1k
3661
2654 10n
7650 BC548B
3650
2655 22n
7654 ST24C02CP
EEPROM MEMORY
FROM 18 7683
2679 100n
STBY ON = HIGH
STBY OFF = LOW
STAND BY
7684 BC548B
3674 5k6
3673 10k
7663 BC548B
3671 2k2
DBB ON = LOW
DBB OFF = HIGH
3676 5k6
7665 BC548B
DBB
6654 LT3P82A
3675 470E
3745 4k7
3736 4k7
3737 4k7
3738 4k7
TO SPECTRUM ANALYZER UNIT 1722
1721
GND
DBB
CAP SW
S.A.
SEL 3
SEL 2
SEL 1
VOLUME UP
VOLUME DOWN
+5A
3743 1k
3742 1k
3741 1k
3740 1k
3739 1k
3683 1k
3684 1k
FROM uP
24
23
22
26
27

1666	L27
1667	L27
1668	M25
1669	L26
1670	L25
1671	L23
1672	L24
1673	K23
1674	L22
1675	L22
1676	L21
1677	L23
1678	M24
1720	L5
1721	N28
1726	K2
2650	G20
2651	I7
2652	P6
2653	P12
2654	Q13
2655	Q14
2656	I7
2658	I8
2673	C10
2674	D19
2679	P16
2685	P3
3650	P14
3651	Q13
3654	P7
3655	P8
3656	Q9
3657	Q9
3658	P10
3659	O10
3660	O9
3661	O10
3666	N6
3667	O6
3669	Q13
3671	O22
3673	O21
3674	Q17
3675	O23
3676	P23
3677	N8
3680	P11
3682	Q11
3683	P27
3684	P27
3690	A10
3691	B11
3692	A12
3693	B13
3694	A14
3695	B14
3696	A15
3697	B15
3700	C19
3701	B10
3705	K8
3706	K8
3707	K7
3708	K7
3712	H5
3713	H4
3714	O4
3718	N8
3719	N4
3720	J4
3721	J4
3722	J4
3723	L4
3724	N4
3725	O4
3726	H5
3727	I4
3736	M26
3737	M26
3738	M27
3739	P27
3740	O27
3741	O27
3742	O27
3743	O27
3745	M26
3746	O3
5650	O13
5652	I8
6001	O8
6652	P7
6653	M8
6654	O23
6656	O3
6664	K8
6665	K8
6666	J8
6667	J8
7650	P14
7654	P8
7655	P9
7656	O9
7663	O22
7664	Q18
7665	O23
7666	N8
7671	A11
7672	A12
7673	A14
7674	A15
7683	M17
7684	P15


DSP PART
LIN
RIN
Filter
Amplifier
to front 1726 1457
DAY
CEY
CKY
A/D
DSP
D/A
uP clock
7531 YM3428
Vin
+Vcc
GND
select
5525
3,58MHz
Amplifier
Filter
L OUT
R OUT
7527 BC848C
7528 BC848C
7529 BC848C
7530 BC848C
7525 BC848C
7526 BC848C
7532 BC848B
6525 BZX79 C5V6
6526 1N4148
DSP-PART (ONLY IN FA80)
SOURCE SELECTOR UNIT
PC.3104-217-00550.DSP.SERV.ES-UNIT update 22-10-92

2ue	F2
2527	C3
2528	C3
2529	C1
2530	B2
2531	D2
2532	E2
2533	B3
2534	B3
2535	F1
2536	E2
2537	F2
2538	F2
2538	F2
2539	E6
2540	G6
2541	D6
2542	G6
2543	E8
2544	G8
2545	E9
2546	G9
2547	E9
2548	G9
2549	E10
2550	G10
2551	F4
2552	F3
2553	C5
2554	C5
2555	C4
2556	E3
2559	D9
2560	G9
3525	B1
3526	C1
3528	C2
3530	C3
3531	C4
3532	B1
3533	C1
3534	C1
3535	B2
3536	C2
3537	A1
3538	E1
3539	E2
3540	E2
3541	E7
3542	G7
3543	D7
3544	F7
3545	E7
3546	G7
3549	D8
3550	F8
3553	E8
3554	G8
3555	D8
3556	F8
3557	D9
3558	F9
3559	E10
3560	G10
3561	E11
3562	G11
3565	F4
3566	D5
3567	D5
3568	D4
3570	F1
5525	G3
6525	F1
6526	F2
7525	B3
7526	B2
7527	D8
7528	F8
7529	D10
7530	F10
7531	F4
7532	E1


SOURCE SELECTOR AND SURROUND PART
DCC L OUT
DCC L IN
AUX L
PHONO L
PHONO R
AUX R
DCC R IN
DCC R OUT
1561
1551
Phone pre amplifier
7451
CCD 1458
TUNER 1458
From plug 1458 LPB
From plug 1458 LCD
From plug 1458 RCD
From plug 1458 RPB
SELECTOR
LOGIC
7452 LC782
To micro 1808
1459
KARAOKE INPUT only for FA80-08/13/0
(JAPAN)
To plug 1458
L REC
R REC
From R3838
CE SEL
DA SEL
CLK SEL
6451 BZX79 C2V7
6452 BZX79 C5V6
RC5
EASYLINK
CD in
DCC OUT
1482
1483
PC.3104-217-00550.SERV.ES-UNIT update 21/10/92

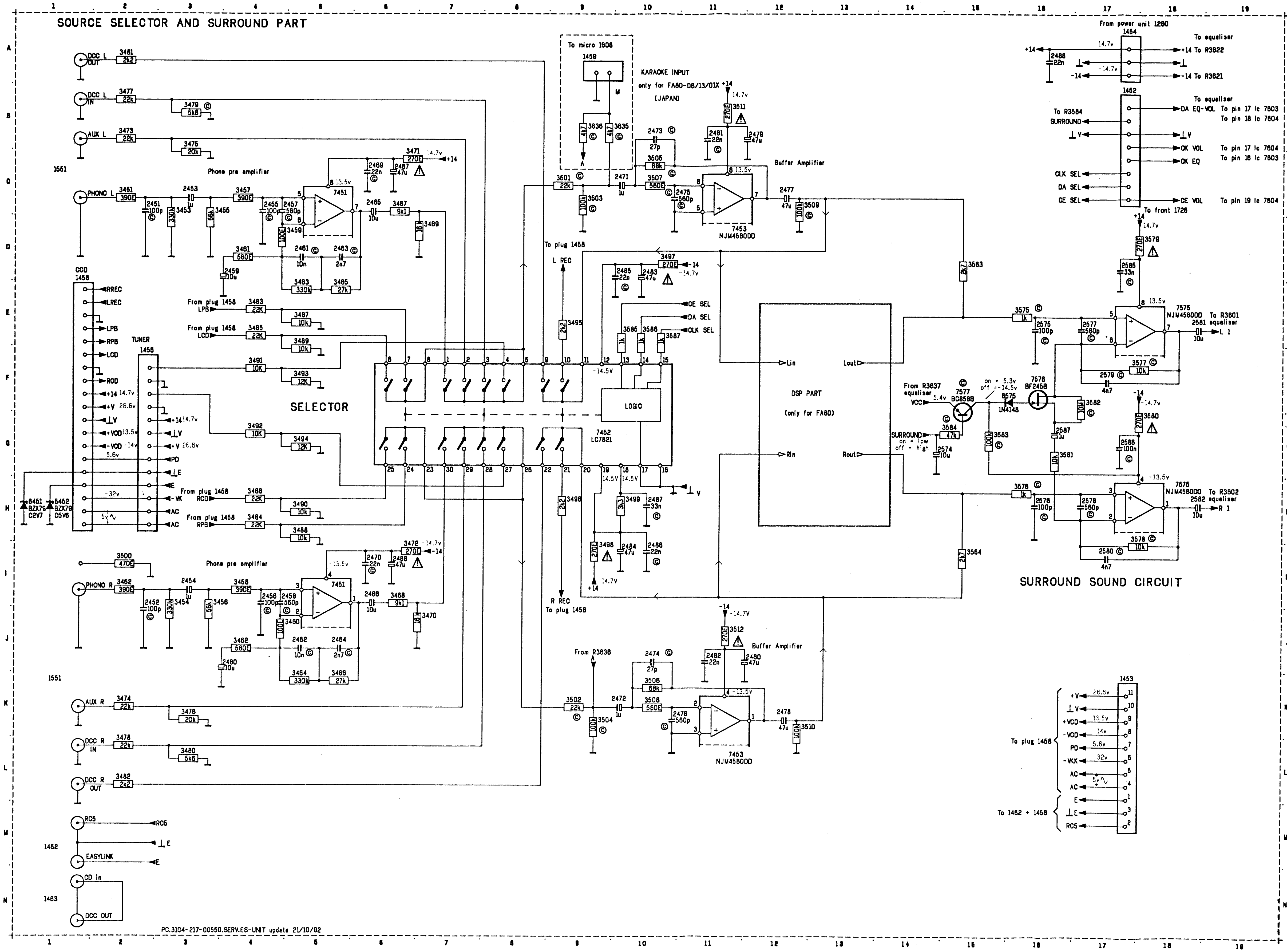
2ue	F2	3565	F4
2527	C3	3566	D5
2528	C3	3567	D5
2529	C1	3568	D4
2530	B2	3570	F1
2531	D2	5525	G3
2532	E2	6525	F1
2533	B3	6526	F2
2534	B3	7525	B3
2535	F1	7526	B2
2536	E2	7527	D8
2537	F2	7528	F8
2538	F2	7529	D10
2538	F2	7530	F10
2539	E6	7531	F4
2540	G6	7532	E1
2541	D6		
2542	G6		
2543	E8		
2544	G8		
2545	E9		
2546	G9		
2547	E9		
2548	G9		
2549	E10		
2550	G10		
2551	F4		
2552	F3		
2553	C5		
2554	C5		
2555	C4		
2556	E3		
2559	D9		
2560	G9		
3525	B1		
3526	C1		
3528	C2		
3530	C3		
3531	C4		
3532	B1		
3533	C1		
3534	C1		
3535	B2		
3536	C2		
3537	A1		
3538	E1		
3539	E2		
3540	E2		
3541	E7		
3542	G7		
3543	D7		
3544	F7		
3545	E7		
3546	G7		
3549	D8		
3550	F8		
3553	E8		
3554	G8		
3555	D8		
3556	F8		
3557	D9		
3558	F9		
3559	E10		
3560	G10		
3561	E11		
3562	G11		

JT

JT

T

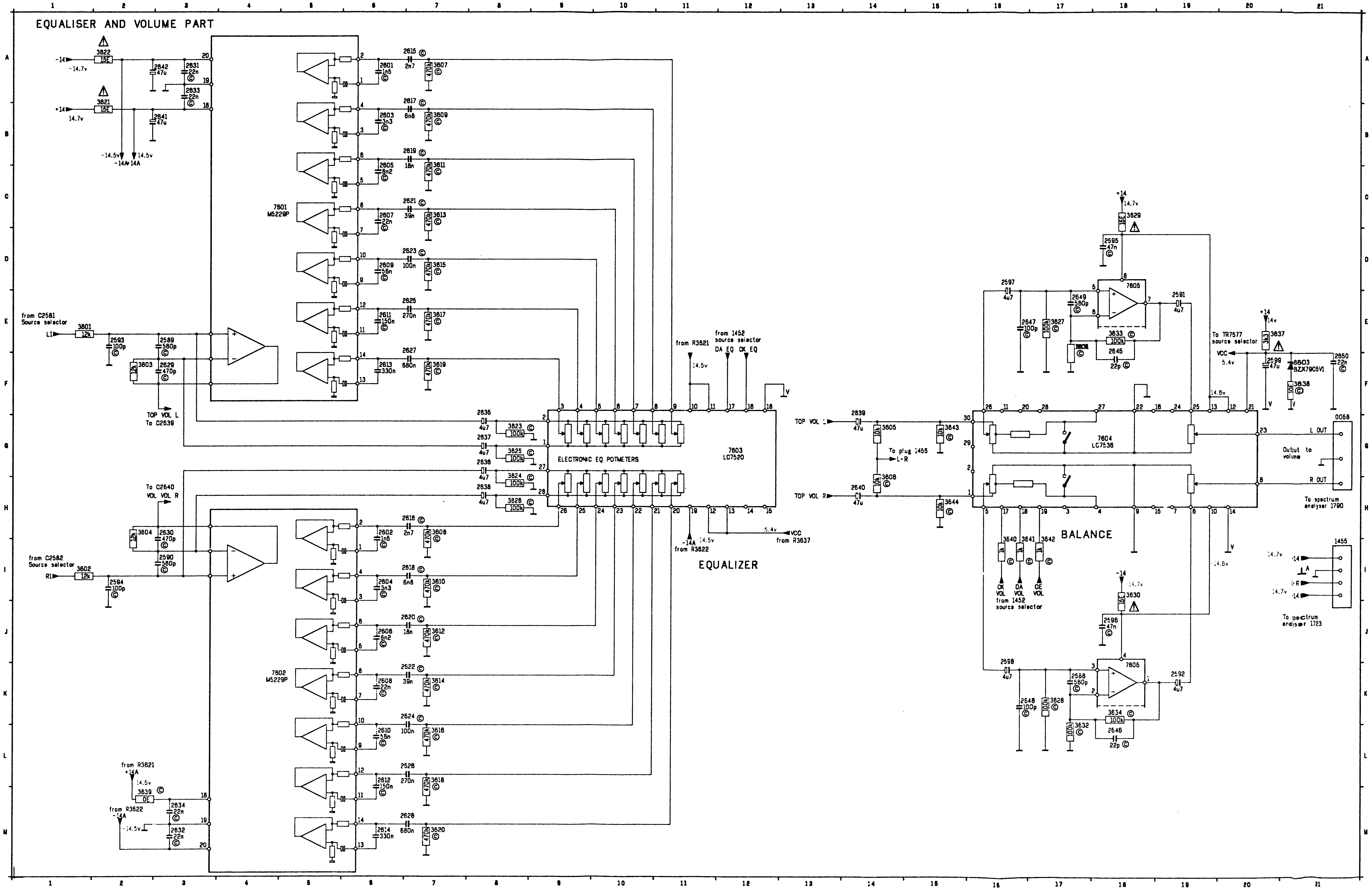
SOURCE SELECTOR AND SURROUND PART


DCC L OUT
DCC L IN
AUX L
PHONO L
1551
Phone pre amplifier
7451
CCD 1458
RREC
LREC
LPB
RPB
LCD
RCD
+14 14.7v
+V 26.6v
⊥V
+VCD 13.5v
-VCD -14v
5.6v
-32v
5v∿
6451 BZX79 C2V7
6452 BZX79 C5V6
TUNER 1458
+14 14.7v
⊥V
+V 26.6v
PD
⊥E
E
-VK
AC
From plug 1458 LPB
From plug 1458 LCD
From plug 1458 RCD
From plug 1458 RPB
SELECTOR
7452 LC7821
LOGIC
CE SEL
DA SEL
CLK SEL
To micro 1808
1459
KARAOKE INPUT
only for FA80-08/13/01X
(JAPAN)
To plug 1458
L REC
R REC
Buffer Amplifier
7453 NJM4580DD
DSP PART
(only for FA80)
Lin
Lout
Rin
Rout
From power unit 1280
1454
To equaliser
+14 To R3822
-14 To R3821
1452
To R3584 SURROUND
DA EQ-VOL To pin 17 Ic 7803
To pin 18 Ic 7804
CK VOL To pin 17 Ic 7804
CK EQ To pin 18 Ic 7803
CLK SEL
DA SEL
CE SEL
CE VOL To pin 19 Ic 7804
To front 1726
From R3637 equaliser
VCC 5.4v
7577 BC858B
SURROUND on = low off = high
on = 5.3v off = -14.5v
6575 1N4148
7576 BF245B
7575 NJM4580DD To R3801 equaliser
L 1
7575 NJM4580DD To R3802 equaliser
R 1
SURROUND SOUND CIRCUIT
AUX R
DCC R IN
DCC R OUT
PHONO R
RC5
1482
EASYLINK
1483
CD in
DCC OUT
From R3838
1453
To plug 1458
To 1482 + 1458

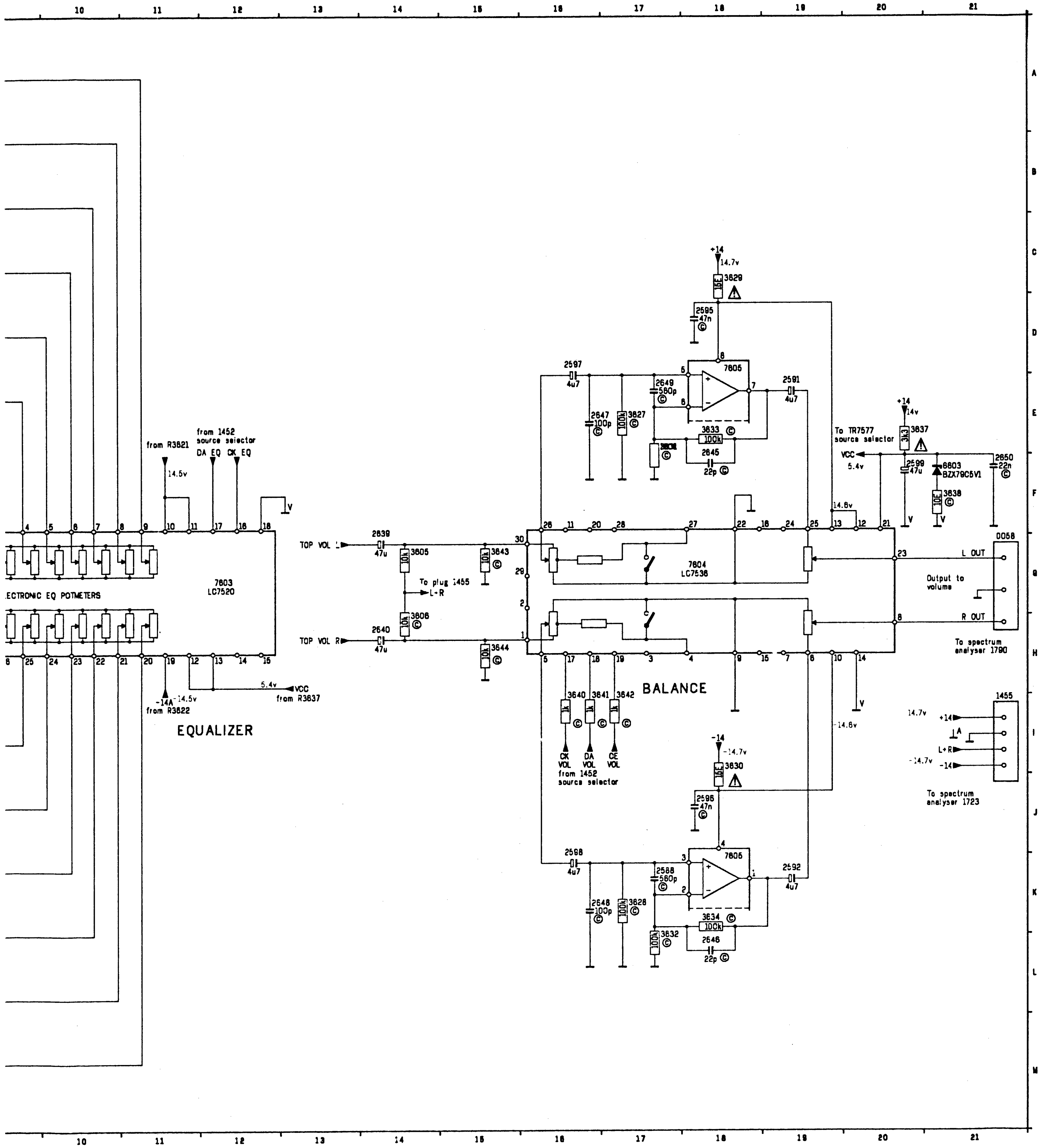
PC.3104-217-00550.SERV.ES-UNIT update 21/10/92

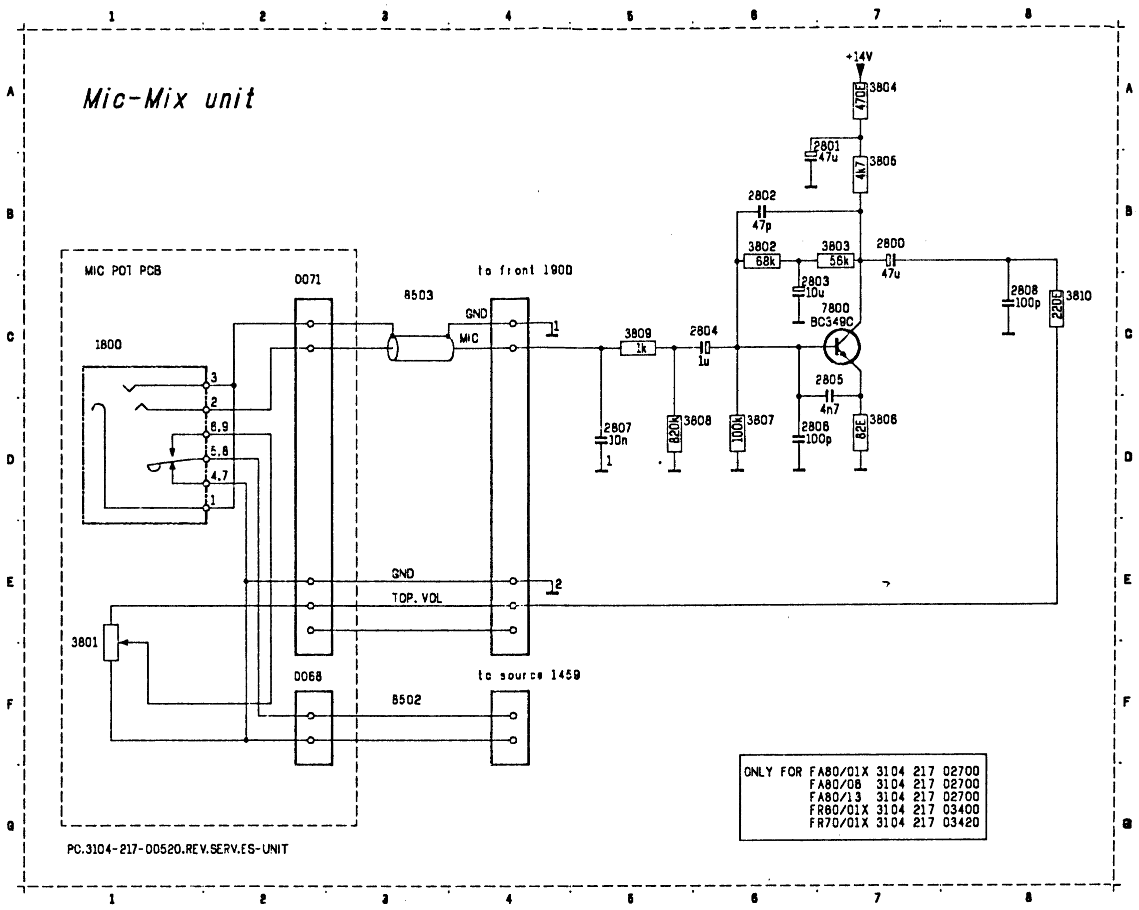
RC5	M1	3576	H16
2451	C2	3577	F18
2452	I2	3578	H18
2453	C3	3579	D18
2454	I3	3580	G18
2455	C4	3581	G16
2456	I4	3582	F17
2457	C4	3583	G15
2458	I4	3584	G15
2459	D4	3585	E10
2460	J4	3586	E10
2461	D5	3587	E10
2462	J5	3635	B9
2463	D5	3636	B9
2464	J5	6451	H1
2465	C6	6452	H1
2466	I6	6575	F16
2467	C6	7451	C5
2468	I6	7451	I5
2469	C6	7452	G9
2470	I6	7453	D11
2471	C10	7453	L11
2472	K10	7575	E18
2473	B10	7575	H18
2474	J10	7576	F16
2475	C10	7577	F15
2476	K10	AUX L	B1
2477	C12	AUX R	K1
2478	K12	CD IN	N1
2479	B12	DCC L	A1
2480	J12	DCC L	B1
2481	B11	DCC R	L1
2482	J11	DCC R	L1
2483	D10	PHONO	C1
2484	I10	PHONO	I1
2485	D10		
2486	I10		
2487	H10		
2488	A16		
2574	G14		
2575	E16		
2576	H16		
2577	E17		
2578	H17		
2579	F17		
2580	I17		
2581	E18		
2582	H18		
2585	D17		
2586	G17		
2587	G16		
3451	C2		
3452	I2		
3453	C3		
3454	I3		
3455	C3		
3456	I3		
3457	C4		
3458	I4		
3459	D4		
3460	J4		
3461	D4		
3462	J4		
3463	E5		
3464	K5		
3465	E5		
3466	K5		
3467	C6		
3468	I6		
3469	D7		
3470	J7		
3471	C6		
3472	I6		
3473	B2		
3474	K2		
3475	B3		
3476	K3		
3477	B2		
3478	L2		
3479	B3		
3480	L3		
3481	A2		
3482	L2		
3483	E4		
3484	H4		
3485	E4		
3486	H4		
3487	E5		
3488	H5		
3489	E5		
3490	H5		
3491	F4		
3492	G4		
3493	F5		
3494	G5		
3495	E9		
3496	H9		
3497	D10		
3498	I9		
3499	H10		
3500	I2		
3501	C9		
3502	K9		
3503	C9		
3504	K9		
3505	C10		
3506	K10		
3507	C10		
3508	K10		
3509	C12		
3510	K12		
3511	B11		
3512	J11		
3563	D15		
3564	I15		
3575	E16		

100x	E17
2588	K17
2589	E3
2590	I3
2591	E19
2592	K19
2593	E2
2594	I2
2595	D18
2596	J18
2597	D16
2598	K16
2599	F20
2601	A6
2602	H6
2603	B6
2604	I6
2605	C6
2606	J6
2607	C6
2608	K6
2609	D6
2610	L6
2611	E6
2612	L6
2613	F6
2614	M6
2615	A7
2616	H7
2617	B7
2618	I7
2619	B7
2620	J7
2621	C7
2622	K7
2623	D7
2624	K7
2625	E7
2626	L7
2627	F7
2628	M7
2629	F3
2630	H3
2631	A3
2632	M3
2633	A3
2634	M3
2635	G8
2636	G8
2637	G8
2638	H8
2639	G14
2640	H14
2641	B2
2642	A2
2645	F18
2646	L18
2647	E16
2648	K16
2649	E17
2650	F21
3601	E1
3602	I1
3603	F2
3604	M2
3605	G14
3606	H14
3607	A7
3608	H7
3609	B7
3610	I7
3611	C7
3612	J7
3613	C7
3614	K7
3615	D7
3616	L7
3617	E7
3618	L7
3619	F7
3620	M7
3621	B2
3622	A2
3623	G8
3624	H8
3625	G8
3626	H8
3627	E17
3628	K17
3629	C18
3630	I18
3631	E17
3632	L17
3633	E18
3634	K18
3637	E20
3638	F21
3639	M2
3640	I16
3641	I16
3642	I17
3643	G15
3644	H15
6603	F21
7601	C5
7602	K5
7603	G12
7604	G18
7605	D18
7605	K18


EQUALISER AND VOLUME PART
3822
15E
-14.7v
3821
14.7v
-14.5v
14.5v
-14A
+14A
2842
47u
2831
22n
2833
22n
2841
47u
7601
M5229P
2815
2n7
3607
2601
1n5
2817
6n8
2603
3n3
3609
2819
18n
2605
8n2
3611
2821
39n
2607
22n
3613
2823
100n
2609
56n
3615
2825
270n
2611
150n
3617
2827
680n
2613
330n
3619
470k
from C2581
Source selector
3801
12k
L1
2593
100p
2589
580p
3803
2629
470p
TOP VOL L
To C2639
2636
2637
2638
4u7
3823
3825
3824
3826
100k
ELECTRONIC EQ POTMETERS
7603
LC7520
from R3821
14.5v
from 1452
source selector
DA EQ
CK EQ
-14A
from R3822
5.4v
VCC
from R3837
EQUALIZER
To C2640
VOL VOL R
3804
2630
470p
2590
580p
from C2582
Source selector
3602
12k
R1
2594
100p
7602
M5229P
2616
2n7
2602
1n5
3608
2618
6n8
2604
3n3
3610
2620
18n
2606
8n2
3612
2622
39n
2608
22n
3614
2624
100n
2610
56n
3616
2626
270n
2612
150n
3618
2628
680n
2614
330n
3620
from R3821
+14A
14.5v
3639
0E
from R3822
-14A
-14.5v
2834
22n
2832
22n
TOP VOL L
TOP VOL R
2639
47u
2640
47u
3605
10k
3606
10k
To plug 1455
L+R
3643
10k
3644
10k
7604
LC7538
BALANCE
3640
3641
3642
1k
CK VOL
DA VOL
CE VOL
from 1452
source selector
+14
14.7v
3629
15E
2595
47n
2597
4u7
2647
100p
3627
100k
2649
580p
7605
3633
100k
2645
22p
2591
4u7
To TR7577
source selector
VCC
5.4v
+14
14v
3837
3k3
2599
47u
6603
BZX79C5V1
3838
10E
2650
22n
14.6v
0058
L OUT
R OUT
Output to volume
To spectrum analyser 1790
1455
14.7v
+14
A
L+R
-14
To spectrum analyser 1723
14.8v
-14
-14.7v
3630
15E
2596
47n
2598
4u7
2648
100p
3628
100k
2588
560p
7605
3634
100k
3632
100k
2646
22p
2592
4u7
A
B
C
D
E
F
G
H
I
J
K
L
M
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21

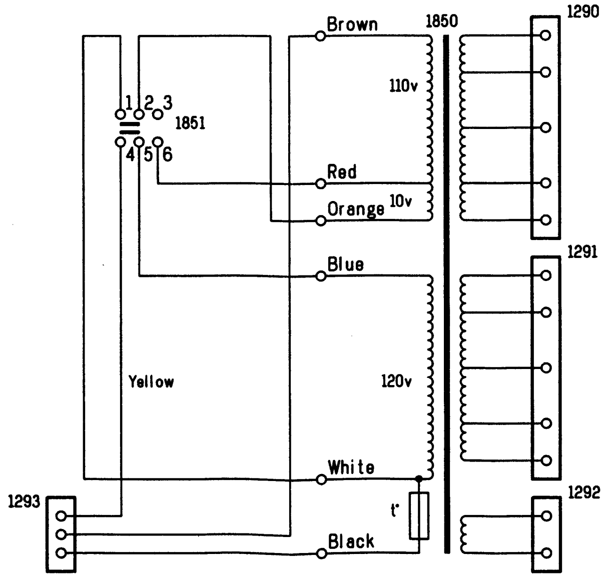
A3	2636 G8	2639 G14	2642 A2	2647 E16	2650 F21	3603 F2	3606 H14	3609 B7	3612 J7	3615 D7	3618 L7	3621 B2	3624 H8	3627 E17	3630 I18	3633 E18	3638 F21	3641 I16	3644 H15	7602 K5	7605 D18
M3	2637 G8	2640 H14	2645 F18	2648 K16	3601 E1	3604 H2	3607 A7	3610 I7	3613 C7	3616 L7	3619 F7	3622 A2	3625 G8	3628 K17	3631 E17	3634 K18	3639 M2	3642 I17	6603 F21	7603 G12	7605 K18
G8	2638 H8	2641 B2	2646 L18	2649 E17	3602 I1	3605 G14	3608 H7	3611 C7	3614 K7	3617 E7	3620 M7	3623 G8	3626 H8	3629 C18	3632 L17	3637 E20	3640 I16	3643 G15	7601 C5	7604 G18	

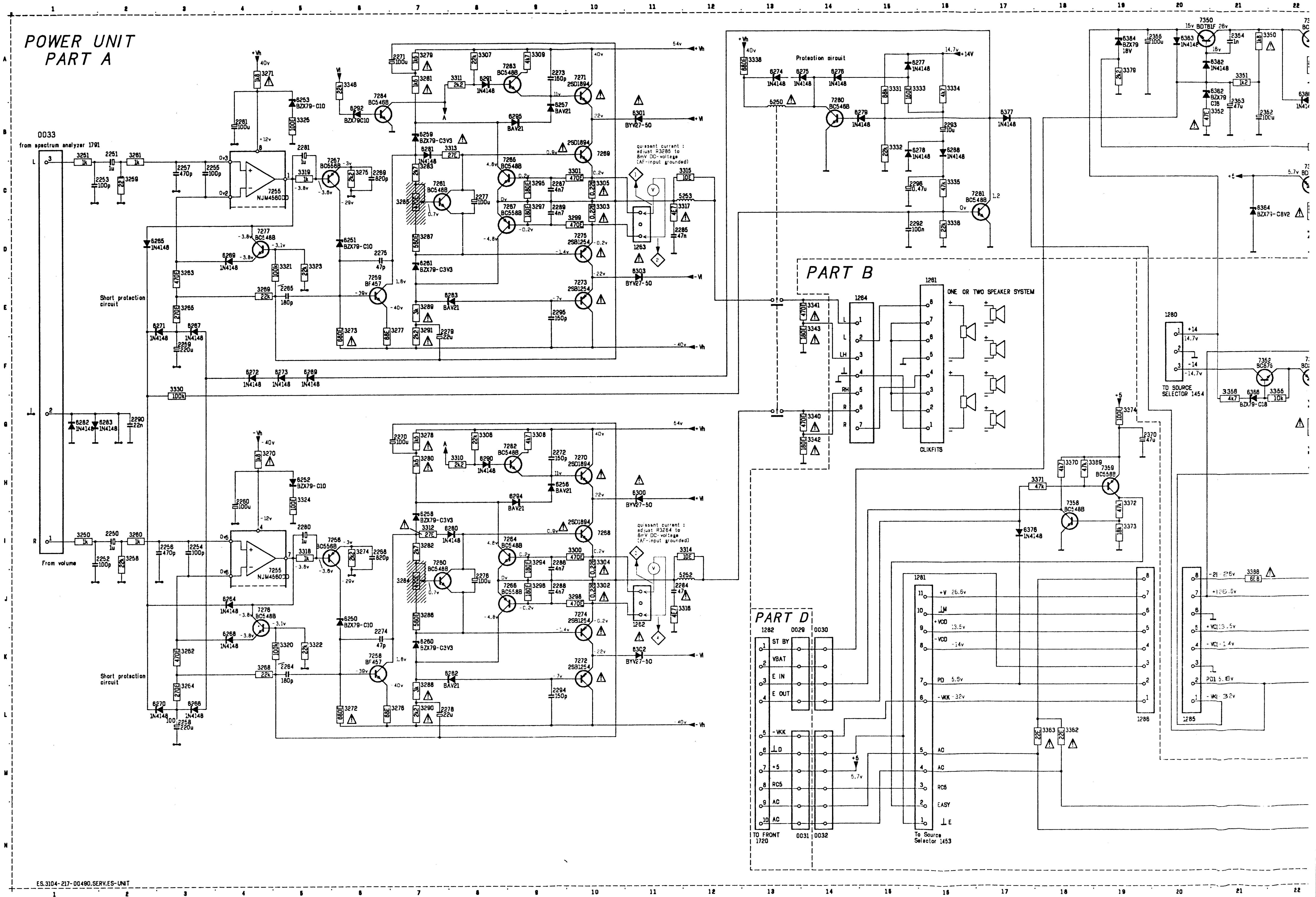

10
11
12
13
14
15
16
17
18
19
20
21
A
B
C
D
E
F
G
H
I
J
K
L
M
ECTRONIC EQ POTMETERS
7603
LC7520
EQUALIZER
from R3821
14.5v
from 1452
source selector
DA EQ
CK EQ
V
-14A
-14.5v
from R3822
5.4v
VCC
from R3637
TOP VOL L
TOP VOL R
2639
47u
2640
47u
3805
10k
3806
10k
To plug 1455
L-R
3643
10k
3644
10k
7604
LC7536
BALANCE
3640
3641
3642
1k
CK VOL
DA VOL
CE VOL
from 1452
source selector
+14
14.7v
3829
15E
2595
47n
2597
4u7
2647
100p
3827
100k
2649
560p
7605
2591
4u7
3833
100k
2645
22p
-14
-14.7v
3830
15E
2596
47n
2598
4u7
2648
100p
3828
100k
2588
560p
2592
4u7
3634
100k
3832
100k
2646
22p
To TR7577
source selector
VCC
5.4v
+14
14v
3837
3k3
2599
47u
6803
BZX79C5V1
3638
10E
2650
22n
14.8v
-14.6v
L OUT
R OUT
Output to
volume
0058
To spectrum
analyser 1790
1455
14.7v
+14
A
L+R
-14.7v
-14
To spectrum
analyser 1723

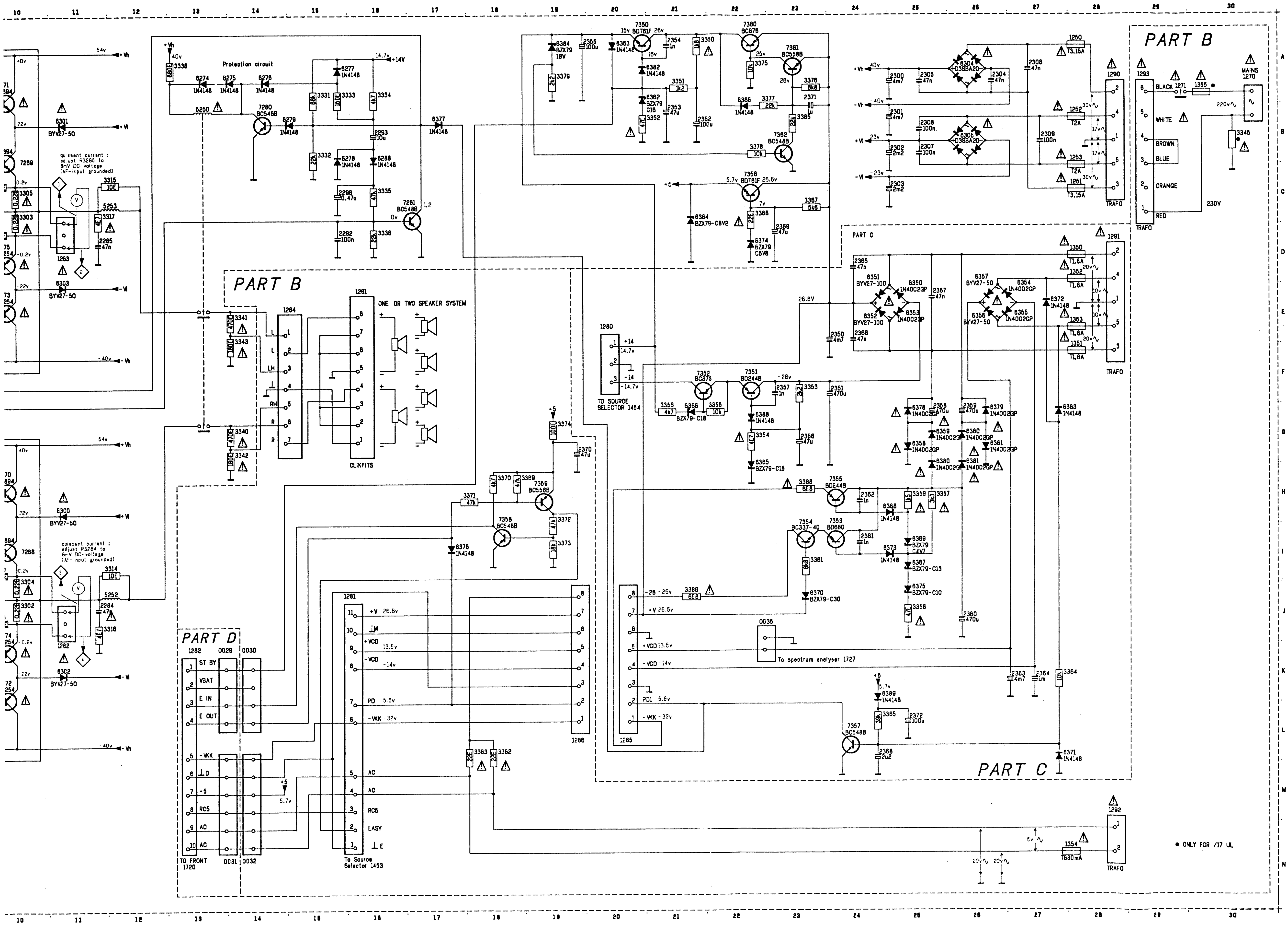

Mic-Mix unit
1
2
3
4
5
6
7
8
A
B
C
D
E
F
G
MIC POT PCB
1800
0071
0068
3801
8503
8502
to front 1900
to source 1459
GND
MIC
TOP. VOL
3809
1k
2804
1u
2807
10n
3808
820k
3807
100k
+14V
3804
470E
2801
47u
3805
4k7
2802
47p
3802
68k
3803
56k
2803
10u
7800
BC549C
2800
47u
2805
4n7
2806
100p
3806
82E
2808
100p
3810
220E
ONLY FOR FA80/01X 3104 217 02700
FA80/08 3104 217 02700
FA80/13 3104 217 02700
FR80/01X 3104 217 03400
FR70/01X 3104 217 03420
PC.3104-217-00520.REV.SERV.ES-UNIT

1800	C1
2800	B7
2801	B6
2802	B6
2803	C6
2804	C6
2805	C7
2806	D6
2807	D5
2808	C8
3801	F1
3802	B6
3803	B7
3804	A7
3805	B7
3806	D7
3807	D6
3808	D5
3809	C5
3810	C8
7800	C7

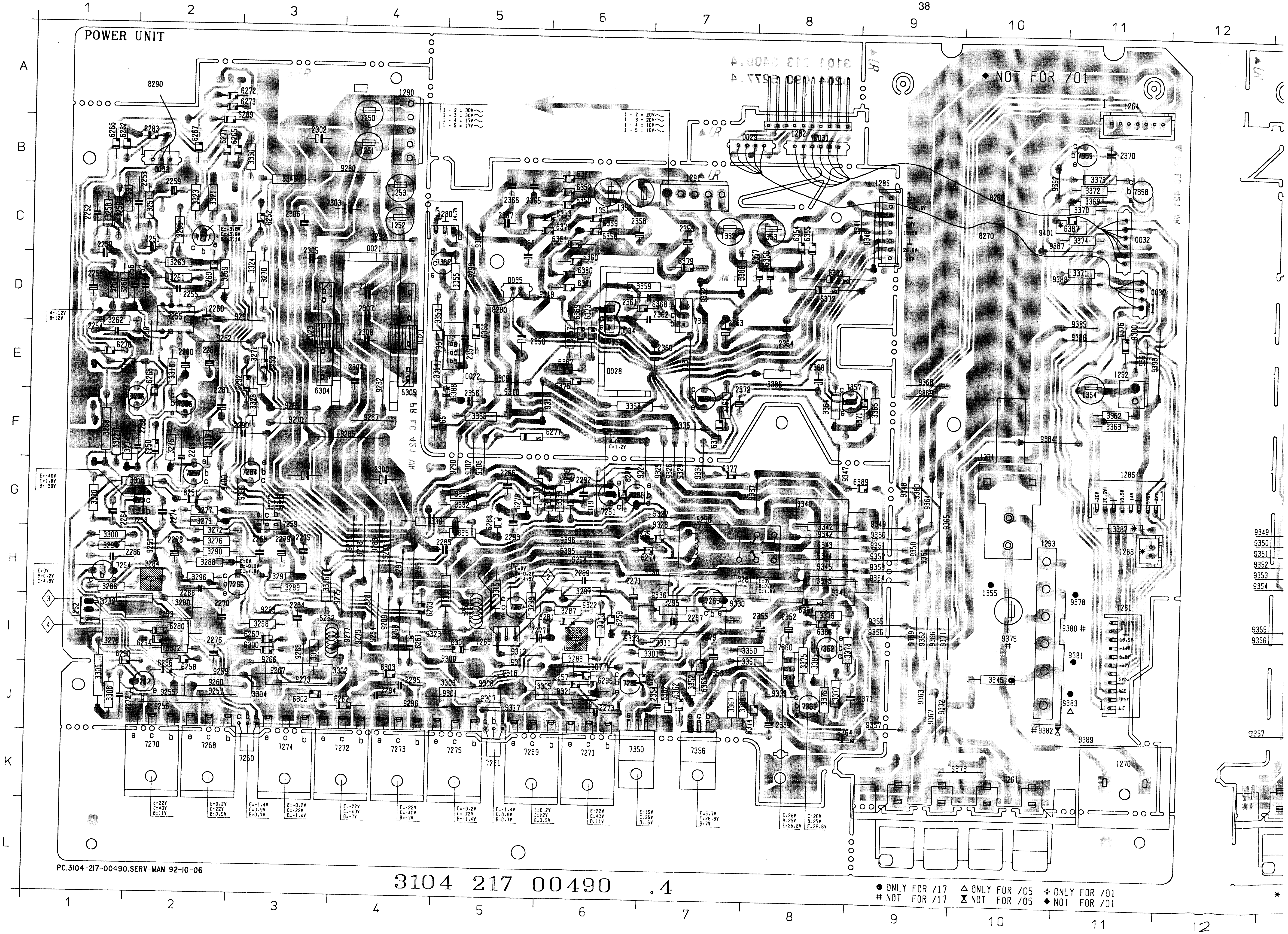
TRAFO ASSY ONLY /01X


1850
1851
1
2
3
4
5
6
Brown
110v
Red
Orange
10v
Blue
120v
White
Black
Yellow
t°
1290
1291
1292
1293


POWER UNIT
PART A
PART B
PART D
0033
from spectrum analyzer 1791
From volume
L
R
Short protection circuit
Protection circuit
quiescent current : adjust R3285 to 8mV DC-voltage (AF-input grounded)
quiescent current : adjust R3284 to 8mV DC-voltage (AF-input grounded)
7255 NJM4560D
7284 BC548B
7283 BC548B
7271 2SD1894
7269 2SD1894
7266 BC548B
7267 BC558B
7261 BC548B
7275 2SB1254
7273 2SB1254
7259 BF457
7258 BF457
7277 BC548B
7276 BC548B
7267 BC558B
7280 BC548B
7281 BC548B
7350 BDT81F
7352 BC676
7359 BC558B
7358 BC548B
1263
1262
1264
1261
ONE OR TWO SPEAKER SYSTEM
CLIKFITS
1280
TO SOURCE SELECTOR 1454
1282
0029
0030
ST BY
VBAT
E IN
E OUT
-VKK
+5
RC5
AC
TO FRONT 1720
0031
0032
1281
To Source Selector 1453
1286
1285
54v
-40v
+Vh
-Vh
+Vl
-Vl
+14V
+5
BYV27-50
1N4148
BAV21
BZX79-C10
BZX79-C3V3
ES.3104-217-00490.SERV.ES-UNIT
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
A
B
C
D
E
F
G
H
I
J
K
L
M
N


PART B
PART B
PART C
PART C
PART D
Protection circuit
ONE OR TWO SPEAKER SYSTEM
CLIKFITS
quiescent current : adjust R3265 to 8mV DC-voltage (AF-input grounded)
quiescent current : adjust R3264 to 8mV DC-voltage (AF-input grounded)
TO SOURCE SELECTOR 1454
To spectrum analyser 1727
TO FRONT 1720
To Source Selector 1453
MAINS 1270
BLACK
WHITE
BROWN
BLUE
ORANGE
RED
TRAFO
220v∿
230V
● ONLY FOR /17 UL

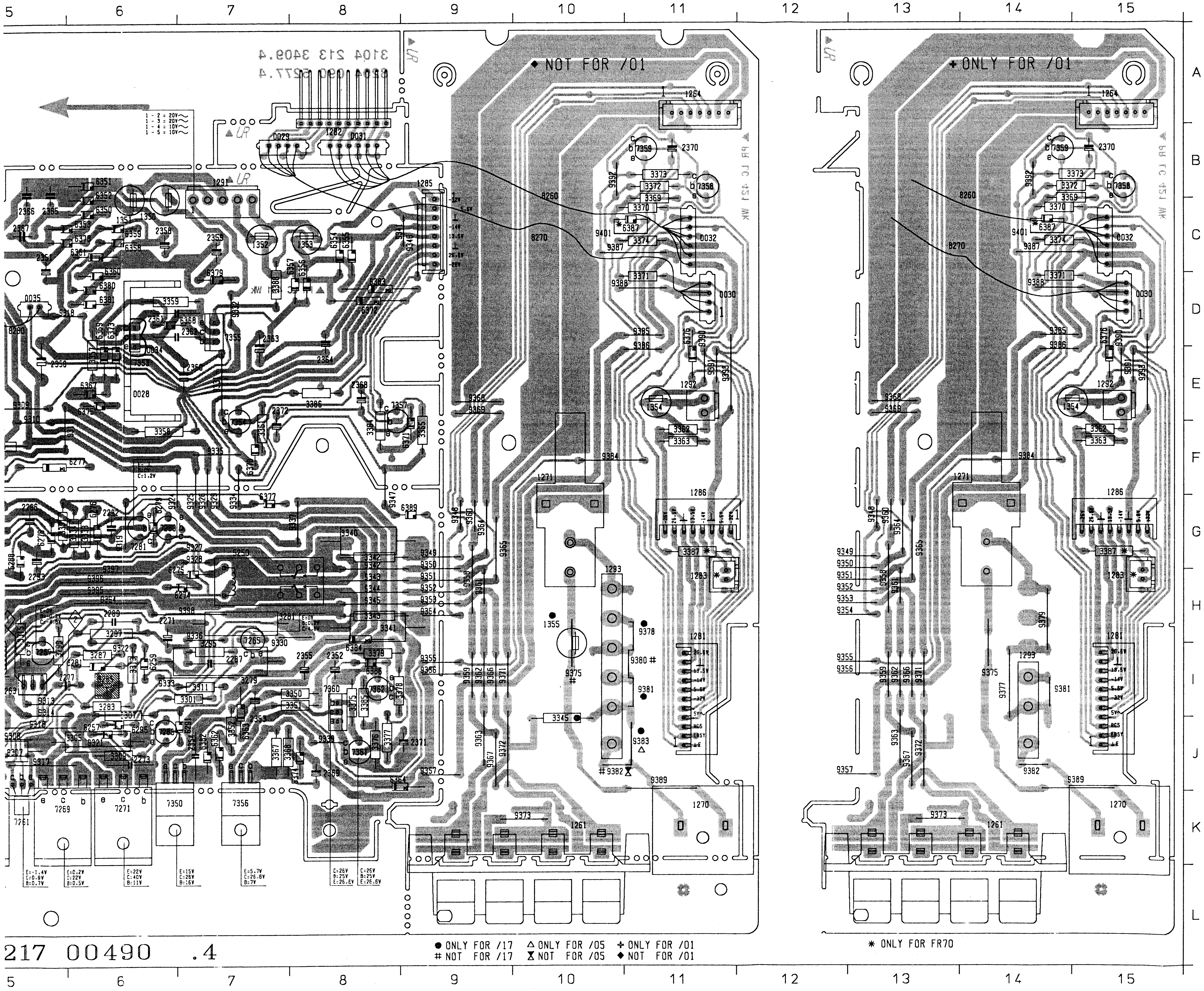
1250	A28
1251	C28
1252	B28
1253	B28
1271	A29
1350	D28
1351	F28
1352	D28
1353	E28
1354	N28
1355	A30
2250	I2
2251	B2
2252	I1
2253	C1
2254	I3
2255	C3
2256	I3
2257	C3
2258	L3
2259	F3
2260	H4
2261	B4
2264	K5
2265	E5
2268	I6
2269	C6
2270	G7
2271	A7
2272	H9
2273	A9
2274	K6
2275	D6
2276	J8
2277	C8
2278	L7
2279	E7
2280	I5
2281	B5
2284	J11
2285	D11
2286	I9
2287	C9
2288	J9
2289	C9
2290	G2
2292	D15
2293	B16
2294	L9
2295	E9
2296	C15
2300	A25
2301	B25
2302	B25
2303	C25
2304	A26
2305	A25
2306	A27
2307	B25
2308	B25
2309	B27
2350	E24
2351	F24
2352	B21
2353	B21
2354	A21
2355	A19
2356	G23
2357	F23
2358	G25
2359	G26
2360	J26
2361	I24
2362	H24
2363	K27
2364	K27
2365	D24
2366	E24
2367	E25
2368	L24
2369	D23
2370	G19
2371	A23
2372	L25
3250	I1
3251	B1
3258	I2
3259	C2
3260	I2
3261	B2
3262	K3
3263	D3
3264	L3
3265	E3
3268	K4
3269	E4
3270	H4
3271	A4
3272	L6
3273	E6
3274	I6
3275	C6
3276	L7
3277	E7
3278	G7
3279	A7
3280	H7
3281	A7
3282	I7
3283	C7
3284	J7
3285	C7
3286	J7
3287	D7
3288	L7
3289	E7
3290	L7
3291	E7
3294	I9
3295	C9
3296	J9
3297	C9
3298	J10
3299	D10
3300	I10
3301	C10
3302	J10
3303	C10
3304	I10
3305	C10
3306	G8
3307	A8
3308	G9
3309	A9
3310	H8
3311	A8
3312	I7
3313	B8
3314	I12
3315	C12
3316	J11
3317	C11
3318	I5
3319	C5
3320	K5
3321	D5
3322	K5
3323	D5
3324	H5
3325	B5
3330	F3
3331	A15
3332	B15
3333	A15
3334	A16
3335	C16
3336	D16
3338	A13
3340	G14
3341	E14
3342	G14
3343	E14
3345	B30
3346	A6
3350	A21
3351	A21
3352	B21
3353	F23
3354	G22
3355	G22
3356	G21
3357	H25
3358	J25
3359	H25
3361	I23
3362	L18
3363	L18
3364	K27
3365	L24
3367	C23
3368	C22
3369	H18
3370	H18
3371	H18
3372	H19
3373	I19
3374	G19
3375	A22
3376	A23
3377	A23
3378	B22
3379	A19
3385	B23
3386	J21
3388	H23
5250	B13
5252	J12
5253	C12
6250	J6
6251	D6
6252	H5
6253	B5
6256	H9
6257	B9
6258	I7
6259	B7
6260	K7
6261	D7
6262	K8
6263	E8
6264	J4
6265	D2
6266	L3
6267	E3
6268	K4
6269	D4
6270	L3
6271	E3
6272	F4
6273	F5
6274	A13
6275	A14
6276	A14
6277	A15
6278	B15
6279	B15
6280	I8
6281	B7
6282	G1
6283	G2
6288	B16
6289	F5
6290	H8
6291	A8
6292	B6
6294	H9
6295	B9
6300	H11
6301	B11
6302	K11
6303	D11
6304	A26
6305	B26
6350	E25
6351	D24
6352	E24
6353	E25
6354	E27
6355	E27
6356	E26
6357	D26
6358	G25
6359	G25
6360	G26
6361	G26
6362	A21
6363	A20
6364	C21
6365	H22
6366	G21
6367	I25
6368	H25
6369	I25
6370	J23
6371	L27
6372	E27
6373	I25
6374	D22
6375	J25
6376	I17
6377	B17
6378	G25
6379	G26
6380	H25
6381	H26
6382	A21
6383	G27
6384	A19
6386	A22
6388	G22
6389	K24
7255	C5
7255	J5
7256	I6
7257	C6
7258	K6
7259	E6
7260	I7
7261	C7
7264	I9
7265	C9
7266	J9
7267	C9
7268	I10
7269	B10
7270	H10
7271	A10
7272	K10
7273	E10
7274	J10
7275	D10
7276	J4
7277	D4
7280	B14
7281	C17
7282	G9
7283	A9
7284	A6
7350	A20
7351	F22
7352	F21
7353	H24
7354	I23
7355	H24
7356	C22
7357	L24
7358	H18
7359	H19
7360	A22
7361	A23
7362	B23


POWER UNIT
◆ NOT FOR /01
1 2 3 4 5 6 7 8 9 10 11 12
A B C D E F G H I J K L
1 - 2 : 30V~
1 - 3 : 30V~
1 - 4 : 17V~
1 - 5 : 17V~
1 - 2 : 20V~
1 - 3 : 20V~
1 - 4 : 10V~
1 - 5 : 10V~
1250
1251
1252
1253
1261
1264
1270
1271
1281
1282
1285
1286
1290
1291
1292
1293
7270
7268
7260
7274
7272
7273
7275
7261
7269
7271
7350
7356
9375 #
9380 #
9382 #
1355
9378
9381
9383 △

PC.3104-217-00490.SERV-MAN 92-10-06

3104 217 00490 .4

● ONLY FOR /17 △ ONLY FOR /05 ✢ ONLY FOR /01
# NOT FOR /17 ⧗ NOT FOR /05 ◆ NOT FOR /01

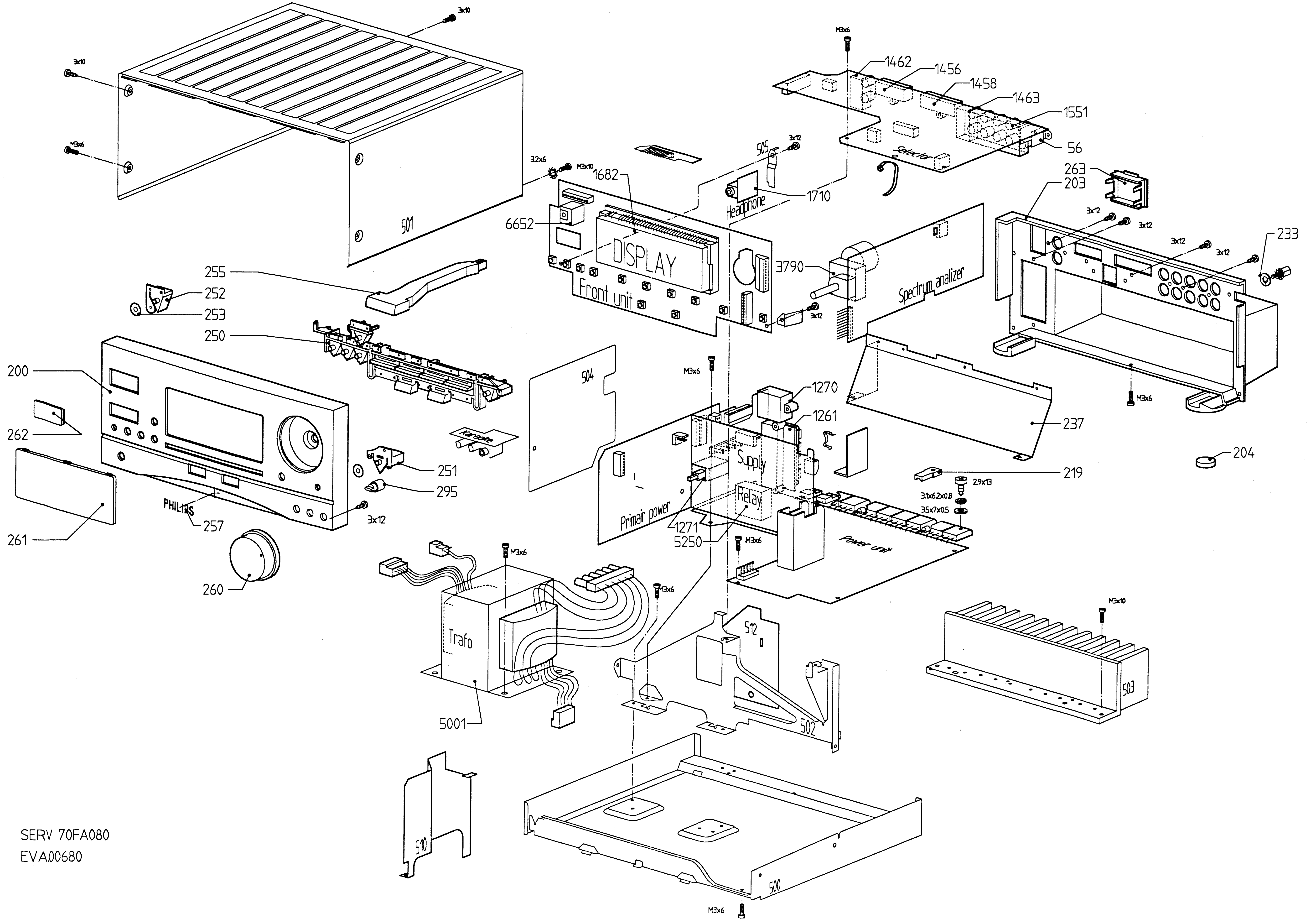


217 00490 .4

● ONLY FOR /17 △ ONLY FOR /05 ✛ ONLY FOR /01
NOT FOR /17 ⧗ NOT FOR /05 ◆ NOT FOR /01

* ONLY FOR FR70

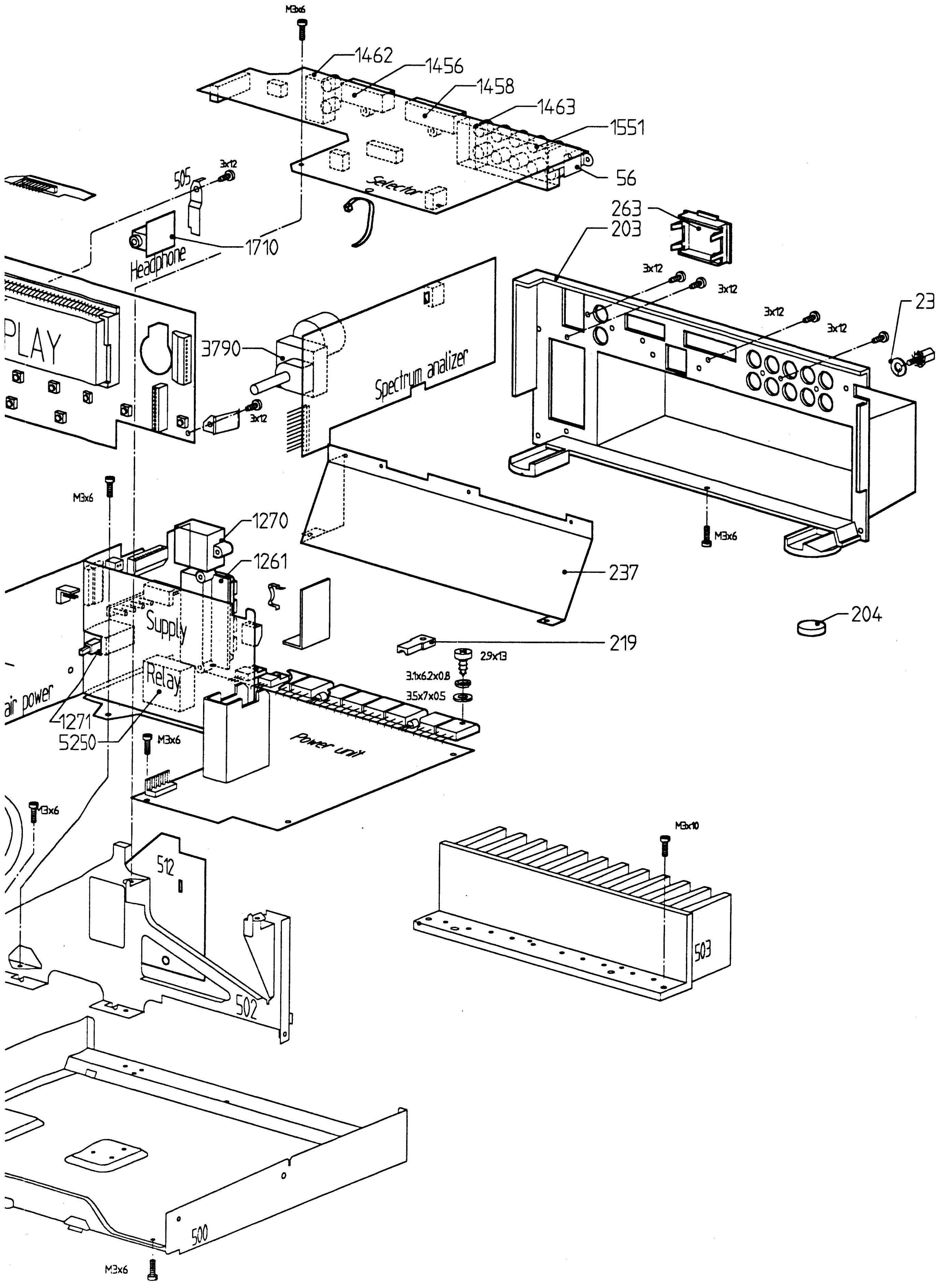
0021	C4
0022	E5
0023	E3
0023	E4
0028	E6
0029	B7
0030	D11
0030	D15
0031	B8
0032	C11
0032	C15
0033	B2
0034	E6
0035	D5
1250	B4
1251	B4
1252	C4
1253	C4
1261	K10
1261	K14
1262	I1
1263	I5
1264	A11
1264	A15
1270	K11
1270	K15
1271	F10
1271	F14
1280	C5
1281	H11
1281	H15
1282	B8
1283	H11
1283	H15
1285	B9
1286	G11
1286	G15
1290	A4
1291	B7
1292	E11
1292	E15
1293	H10
1293	I14
1350	C6
1351	C6
1352	C7
1353	C8
1354	E11
1354	E14
1355	H10
2250	C1
2251	C2
2252	C1
2253	B2
2254	E1
2255	D2
2256	D1
2257	D2
2258	D1
2259	C2
2260	D2
2261	E2
2264	G1
2265	H3
2268	F2
2269	F2
2270	I2
2271	H6
2272	J2
2273	J6
2274	G2
2275	H3
2276	I2
2277	I5
2278	H2
2279	H3
2280	E2
2281	F2
2284	I3
2285	H5
2286	H2
2287	I7
2288	I2
2289	H6
2290	F3
2292	G6
2293	H5
2294	J4
2295	J4
2296	G5
2300	G4
2301	G3
2302	B3
2303	C3
2304	E4
2305	C3
2306	C3
2307	D4
2308	E4
2309	D4
2350	E5
2351	C5
2352	I8
2353	J7
2354	J7
2355	I8
2356	E5
2357	E5
2358	C6
2359	C7
2360	E7
2361	D6
2362	D7
2363	D7
2364	E8
2365	C5
2366	C5
2367	C5
2368	E8
2369	J8
2370	B11
2370	B15
2371	J9
2372	E7
3250	C1
3251	C2
3258	C1
3259	C1
3260	D1
3261	D2
3262	E1
3263	D2
3264	D1
3265	C2
3268	F1
3269	D2
3270	D3
3271	E3
3272	H2
3273	G2
3274	F1
3275	F2
3276	H2
3277	G2
3278	I1
3279	I7
3280	I2
3281	H7
3282	I1
3283	I6
3284	H2.
3285	I6
3286	H1
3287	I6
3288	H2
3289	H3
3290	H2
3291	H3
3294	H1
3295	I7
3296	H2
3297	H6
3298	I3
3299	I5
3300	H1
3301	I7
3302	J4
3303	J5
3304	J3
3305	J6
3306	J1
3307	I6
3308	J1
3309	J6
3310	G2
3311	I7
3312	I2
3313	I6
3314	I3
3315	H5
3316	H3
3317	H5
3318	E2
3319	F2
3320	G1
3321	C2
3322	F1
3323	C2
3324	D3
3325	F3
3330	B3
3331	G5
3332	G5
3333	G6
3334	G6
3335	H5
3336	G5
3338	G4
3340	G8
3341	H8
3342	G8
3343	H8
3345	J10
3346	B3
3350	I8
3351	I8
3352	J7
3353	D4
3354	E4
3355	D5
3356	F5
3357	E6
3358	F6
3359	D6
3361	F7
3362	F11
3362	F15
3363	F11
3363	F15
3364	F8
3365	F9
3367	J7
3368	J8
3369	C11
3369	C14
3370	C11
3370	C14
3371	D11
3371	D14
3372	B11
3372	B14
3373	B11
3373	B15
3374	C11
3374	C14
3375	I8
3376	J8
3377	J8
3378	I9
3379	I8
3385	I8
3386	E8
3387	G11
3387	G15
3388	D7
5250	G7
5252	I3
5253	I5
6250	F2
6251	G2
6252	C3
6253	E3
6256	J2
6257	J6
6258	J2
6259	I6
6260	I3
6261	I4
6262	J4
6263	I4
6264	E1
6265	B2
6266	B1
6267	B2
6268	E2
6269	D2
6270	E1
6271	B2
6272	A3
6273	A3
6274	H7
6275	H6
6276	G6
6277	F6
6278	G5
6279	G6
6280	I2
6281	I6
6282	B1
6283	B2
6288	G5
6289	B3
6290	I1
6291	J7
6292	E3
6294	I2
6295	J6
6300	I3
6301	I5
6302	J3
6303	J4
6304	E3
6305	E4
6350	C6
6351	B6
6352	B6
6353	C6
6354	C8
6355	C8
6356	C8
6357	C8
6358	C6
6359	C6
6360	C6
6361	C6
6362	J7
6363	J7
6364	J8
6365	F5
6366	E5
6367	E6
6368	D7
6369	D6
6370	F7
6371	F9
6372	D8
6373	D6
6374	J8
6375	E6
6376	D11
6376	D15
6377	G7
6378	C6
6379	D7
6380	D6
6381	D6
6382	J7
6383	D8
6384	I8
6386	I8
6387	C11
6387	C14
6388	E5
6389	G9
7255	D2
7256	F2
7257	G2
7258	G2
7259	G3
7260	K3
7261	K5
7264	H1
7265	H7
7266	H3
7267	I5
7268	K2
7269	K5
7270	K2
7271	K6
7272	K4
7273	K4
7274	K3
7275	K5
7276	F2
7277	C2
7280	G6
7281	G6
7282	J2
7283	J6
7284	G3
7350	K6
7351	E4
7352	D4
7353	E6
7354	F7
7355	D7
7356	K7
7357	E8
7358	B11
7358	B15
7359	B11
7359	B14
7360	I8
7361	J8
7362	I8
8260	C10
8260	C14
8270	C10
8270	C13
8280	D5
8290	A2
9250	E2
9251	H2
9253	I2
9255	J2
9256	J2
9257	J2
9259	J2
9260	J2
9261	D3
9262	E2
9263	I3
9266	I3
9267	J3
9268	I3
9269	F3
9270	F3
9273	J3
9275	H4
9276	H4
9277	I4
9278	H4
9279	I4
9280	B4
9281	H4
9282	E4
9283	H4
9284	I4
9285	F4
9287	F4
9288	H4
9289	I4
9290	I4
9291	H4
9292	C4
9295	H4
9296	J4
9298	G5
9299	D5
9300	I5
9301	J5
9302	G5
9304	C5
9306	G5
9307	J5
9308	J5
9309	E5
9310	E5
9311	F6
9313	I5
9314	I5
9316	J5
9317	J5
9318	D6
9319	G6
9321	J6
9322	I6
9323	I4
9324	G6
9325	G7
9326	G7
9327	G7
9328	G7
9329	G7
9330	I7
9331	E7
9332	D7
9333	I6
9334	G7
9335	F7
9336	H7
9337	G8
9339	J8
9341	C9
9342	G8
9343	H8
9344	H8
9345	H8
9346	C9
9347	G8
9348	G13
9348	G9
9349	G12
9349	G9
9350	G12
9350	G9
9351	H12
9351	H9
9352	H12
9352	H9
9353	H12
9353	H9
9354	H12
9354	H9
9355	I12
9355	I9
9356	I12
9356	I9
9357	J12
9357	J9
9358	H13
9358	H9
9359	I13
9359	I9
9360	G13
9360	G9
9361	H13
9361	H9
9362	I13
9362	I9
9363	J13
9363	J9
9364	G13
9364	G9
9365	G13
9365	G9
9366	I13
9366	I9
9367	J13
9367	J9
9368	E13
9368	E9
9369	E13
9369	E9
9371	I13
9371	I9
9372	J13
9372	J9
9373	K10
9373	K13
9375	I10
9375	I14
9377	I14
9378	H11
9379	H14
9380	I11
9381	I11
9381	I14
9382	J10
9382	J14
9383	J11
9384	F10
9384	F14
9385	D11
9385	D14
9386	E11
9386	E14
9387	C10
9387	C14
9388	D10
9388	D14
9389	J11
9389	J15
9390	D11
9390	D15
9391	E11
9391	E15
9392	B10
9392	B14
9393	E11
9393	E15
9394	H6
9395	H6
9396	H6
9397	H6
9398	H7
9399	G3
9400	G2
9401	C10
9401	C14


3x10
3x10
M3x6
501
255
252
253
250
200
262
261
PHILIPS
257
260
251
295
3x12
3.2x6
M3x10
1682
6652
DISPLAY
Front unit
505
3x12
Headphone
1710
M3x6
1462
1456
1458
1463
1551
56
Selector
3790
Spectrum analizer
3x12
263
203
3x12
3x12
3x12
3x12
233
504
Karaoke
M3x6
1270
1261
Supply
Relay
Primair power
1271
5250
M3x6
Power unit
237
M3x6
219
2.9x13
3.1x6.2x0.8
3.5x7x0.5
204
M3x6
M3x6
Trafo
5001
512
502
M3x10
503
510
500
M3x6

SERV 70FA080
EVA.00680

MECHANICAL

200	4822 426
200	4822 426
203	4822 426
203	4822 426
204	4822 462
219	4822 404
233	4822 502
237	4822 466
250	4822 276
251	4822 410
252	4822 410
253	4822 466
255	4822 535
257	4822 459
260	4822 413
261	4822 450
262	4822 450
263	4822 462
295	4822 410
1261	4822 290
1270	4822 267
1271	4822 276
1456	4822 267
1458	4822 267
1462	4822 267
1463	4822 267
1551	4822 267
1682	4822 130
1710	4822 267
1800	4822 267
3790	4822 102
5001	4822 146
5001	4822 146
5001	4822 146
5250	4822 280
6652	4822 130
	4822 736
	4822 218
	4822 321
	4822 321


M3x6
1462
1456
1458
1463
1551
56
505
3x12
1710
Headphone
Selector
263
203
3x12
3x12
3x12
3x12
233
PLAY
3790
Spectrum analizer
3x12
M3x6
1270
1261
237
M3x6
204
219
2.9x13
3.1x6.2x0.8
3.5x7x0.5
Supply
Relay
air power
1271
5250
M3x6
Power unit
M3x6
512
M3x10
503
502
500
M3x6

MECHANICAL PARTS

200	4822 426 51654	FRONT ASSY FA091
200	4822 426 51659	FRONT ASSY /01X
203	4822 426 20223	BACKSIDE ASSY /01X
203	4822 426 20212	BACKSIDE ASSY
204	4822 462 41933	FELT FOOT
219	4822 404 21242	PRESS BRACKET
233	4822 502 13921	PHONO SCREW
237	4822 466 62233	INSOLAT.PLATE
250	4822 276 50356	SEL.BUTTON ASSY
251	4822 410 62027	DBB BUTTON
252	4822 410 62026	DSP BUTTON
253	4822 466 93146	DBB DSP PLATE
255	4822 535 93321	POWER ROD
257	4822 459 11078	WORDMARK
260	4822 413 51415	VOLUME KNOP ASSY
261	4822 450 61908	WINDOW ASSY
262	4822 450 61909	IR WINDOW
263	4822 462 71849	TERMINAL
295	4822 410 62431	VOLUME KNOB/01X
1261	4822 290 61102	L.S.PUCH TERMINAL
1270	4822 267 31383	MAINS SOCKET
1271	4822 276 13277	POWER SWITCH
1456	4822 267 60332	CONNECTOR BMT 13P
1458	4822 267 60331	CONNECTOR BMT 19P
1462	4822 267 31503	SOCKET 2F.
1463	4822 267 31504	SOCKET 2F.
1551	4822 267 51159	SOCKET 8F.
1682	4822 130 91134	DISPLAY
1710	4822 267 31514	HEADPHONE JACK
1800	4822 267 31607	MICRO SOCKET /01X
3790	4822 102 10414	VOLUME ASSY
5001	4822 146 31132	TRAFO ASSY /01X
5001	4822 146 31133	MAINS TRAFO /05
5001	4822 146 31123	MAINS TRAFO
5250	4822 280 70368	RELAY
6652	4822 130 81254	IR EYE
	4822 736 21775	IFU FW91
	4822 218 10467	REMOTE RH6622
	4822 321 61708	LEAD ASSY
	4822 321 10249	MAINS CORD SET

7575	4822 209 70157	NJM4560DD
7576	4822 130 41024	BF245B
7577	5322 130 41983	BC858B
7601	4822 209 71301	M5229P
7602	4822 209 71301	M5229P
7603	4822 209 30372	LC7520
7604	4822 209 31618	IC LC7536
7605	4822 209 70157	NJM4560DD
7650	4822 130 40937	BC548B
7654	4822 130 44197	BC558B
7655	4822 130 40937	BC548B
7656	4822 130 40937	BC548B
7663	4822 130 40937	BC548B
7664	4822 130 40937	BC548B
7665	4822 130 40937	BC548B
7666	4822 130 40937	BC548B
7671	4822 130 40937	BC548B
7672	4822 130 40937	BC548B
7673	4822 130 40937	BC548B
7674	4822 130 40937	BC548B
7683	4822 209 31499	TMP87CH70F-
7684	4822 209 62098	ST24C02CP
7690	5322 130 44779	BC338-40
7691	5322 130 44779	BC338-40
7692	4822 130 40937	BC548B
7785	4822 209 31502	BA3826S
7786	4822 209 63667	BA6229
7787	4822 209 83274	NJM4560D
7788	4822 130 40948	BC548A
7789	4822 130 40937	BC548B
7800	4822 130 44246	BC549C

Service Information

1992-08-25

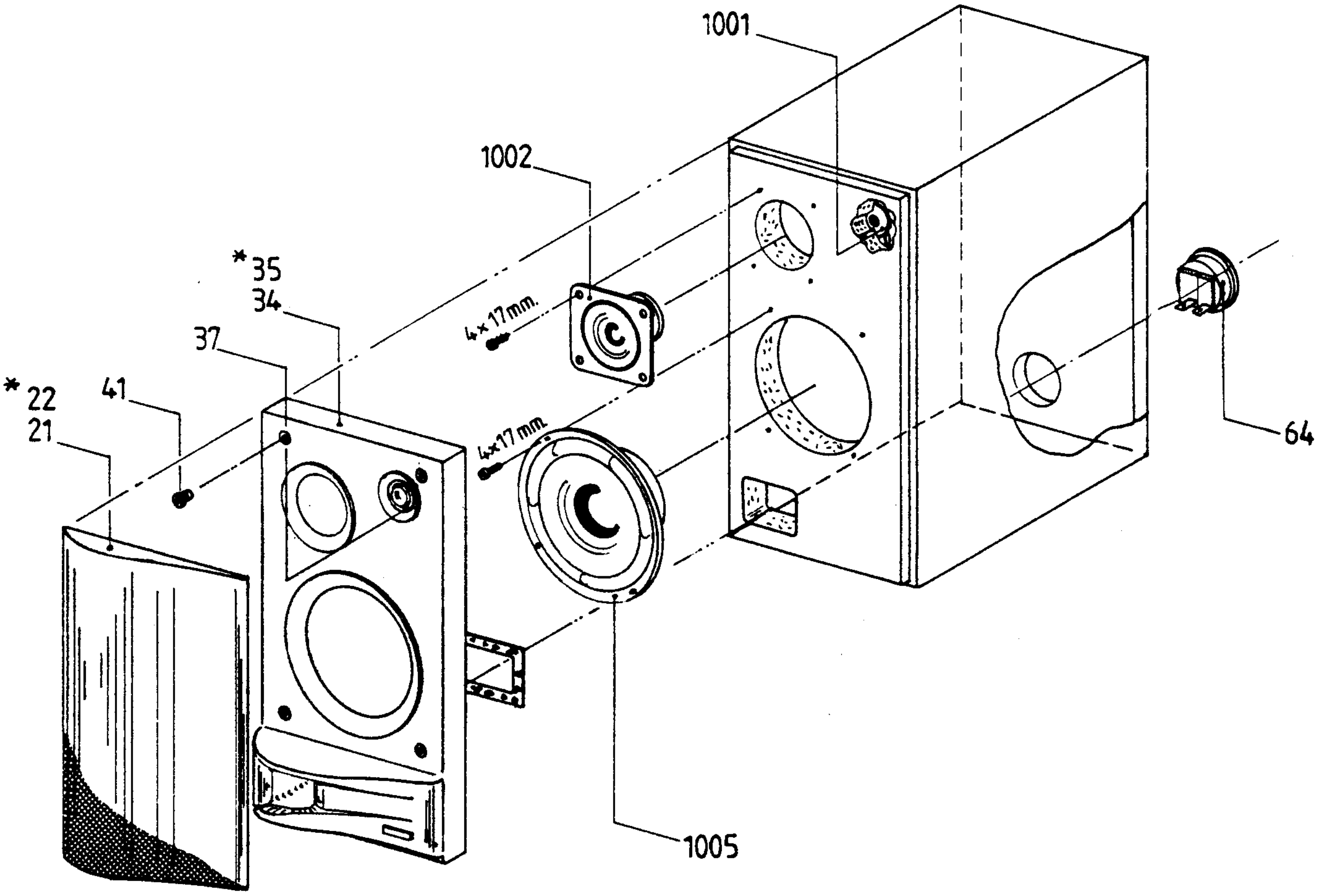
Loudspeakerbox
70/FB 60
70/FB 70
70/FB 80

A92/254

Product Service Group CE Audio

* In the loudspeaker boxes 70/FB 60 - 70/FB 70 and 70/FB 80
a click fit is added.
This from DD number 01 onwards.

4822 267 3133 (pos. 64 on exploded view)


1001
1002
*35
34
37
*22
21
41
4×17mm.
4×17mm.
64
1005

Service Information

1992-10-28

LOUDSPEAKER BOX 70/FB 60
70/FB 70
70/FB 80

A92 / 431

Product Service Group CE Audio

In the service manual (4822 725 24096) of Loudspeakerboxes 70 FB 60 - 70 FB 70 and 70 FB 80, the list of mechanical parts on page 8 should be replaced as mentioned below :

8. LIST OF MECHANICAL PARTS

For FB 60 and FB 70

21	4822 458 40561	LEFT-VERSION
22	4822 458 40562	RIGHT-VERSION
34	4822 445 30238	LEFT-VERSION
35	4822 445 30329	RIGHT-VERSION
37	4822 240 80043	DOME
41	4822 325 80497	GROMMET
64	4822 267 31331	CLICKFIT

For FB 80

21	4822 458 40561	LEFT-VERSION
22	4822 458 40562	RIGHT-VERSION
34	4822 445 30236	LEFT-VERSION
35	4822 445 30237	RIGHT-VERSION
37	4822 240 80043	DOME
41	4822 325 80497	GROMMET
64	4822 267 31331	CLICKFIT

Service
Service
Service

1. INTRODUCTION:

How to use this manual?

- Diagram
  The numbers near the symbols correspond to the "Item numbers"

- Loudspeakers
  The loudspeakers are divided into:
  - Tweeters (for high tones) TW
  - Piezo (for high tones) Pi
  - Woofers (for low tones) WO

  Next to the item number the 12-digit service codenumber of the loudspeaker is given.

- Capacitor, resistor, coil
  Next to the item number the service codenumber has been stated as well as the technical data of these components.

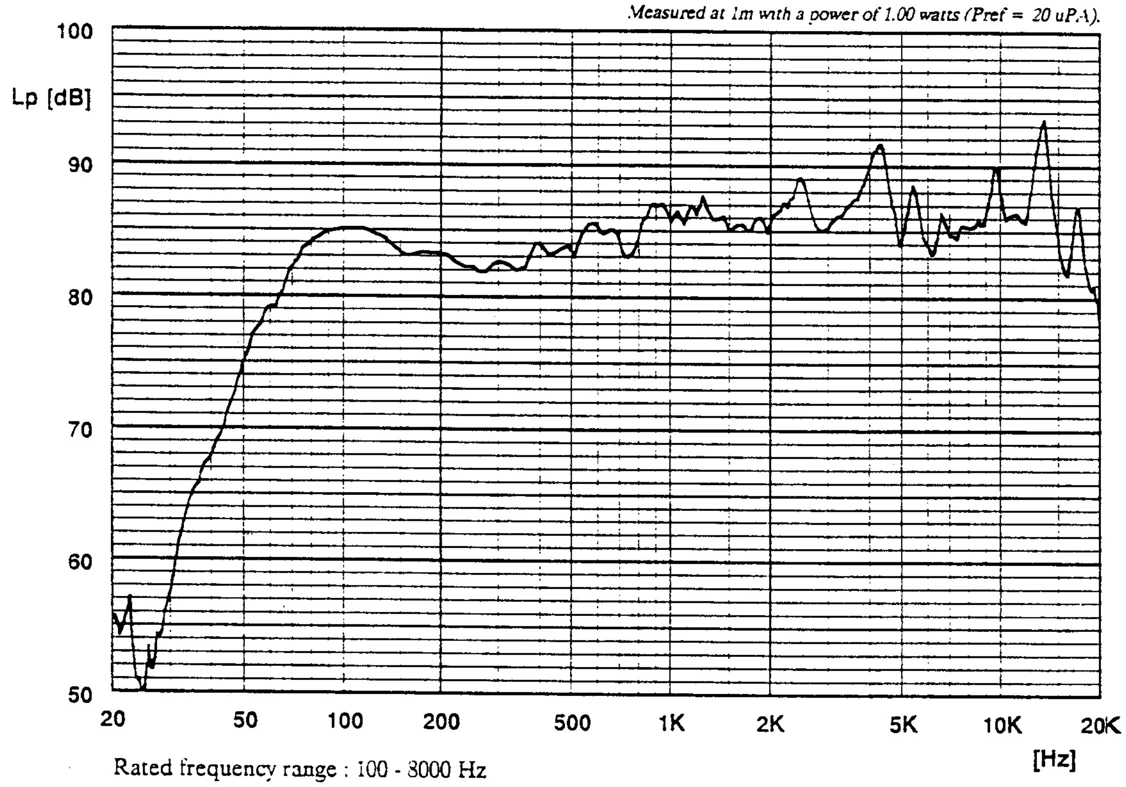
- The item numbers on the exploded vieuw shows the different mechanical parts which may be available as a service spare part.
  For their codenumbers and description see "list of mechanical parts".

2. TECHNICAL SPECIFICATIONS:

	FB 60	FB 70	FB 80
2.1 General data:			
Type of system	3 way bass reflex	3 way bass reflex	3 way bass reflex
Acoustical volume	9,2 L	9,2 L	9,2 L
Total volume	16,2 L	16,2 L	16,2 L
Outside dimension W X H X D	172,5 X 345 X 272	172,5 X 345 X 272	172,5 X 345 X 272
Weight exclusive packaging	4,2 kg	4,4 kg	4,5 kg
2.2 Electro-acoustical data:			
Rated impedance	6 Ohm	6 Ohm	6 Ohm
Rated power PHC	30 Watt	50 Watt	60 Watt
Maximum power Pmax	50 Watt	90 Watt	100 Watt
Sensitivity	88 dB/W/1 m	88 dB/W/1 m	87 dB/W/1 m
Operating power	6,3 Watt	6,3 Watt	6,3 Watt
Resonance frequencies	35 & 90 Hz	35 & 100 Hz	35 & 100 Hz
Cross-over frequencies	2500 Hz	3000 Hz	2500 Hz
Frequency range	70 - 20 000 Hz	65 - 20 000 Hz	60 - 20 000 Hz
Sweep voltage	6 volts	6 volts	6 volts

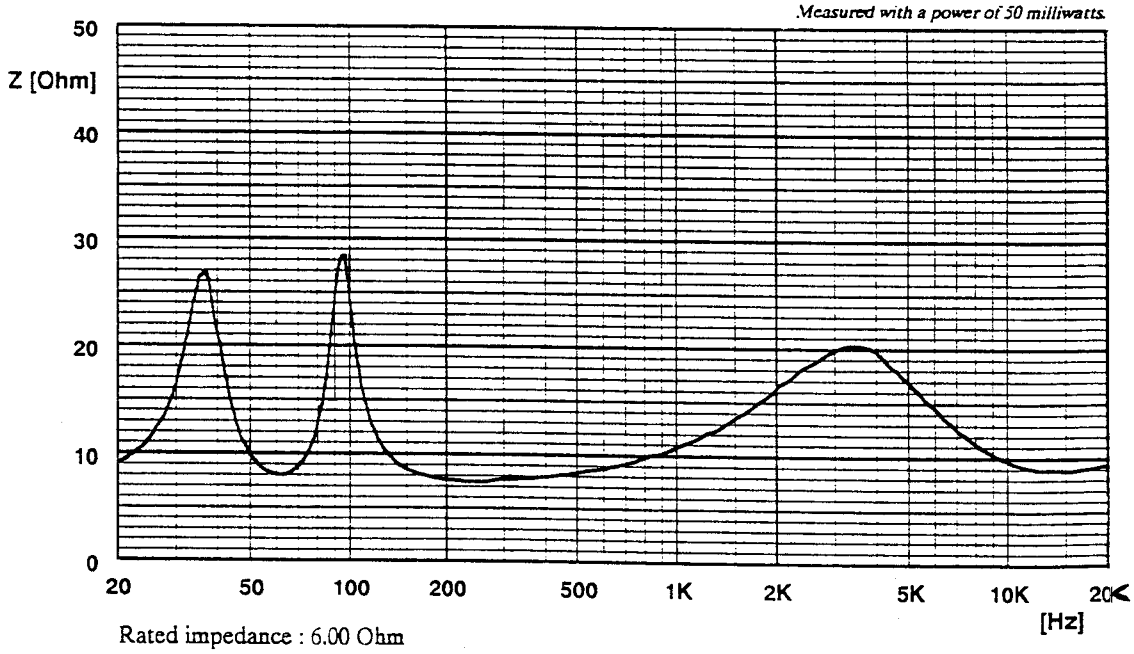
Type : FB60
Nr : 60.01177

Thursday, January 23, 1992, 13.16h



Rated frequency range : 100 - 3000 Hz
Characteristic sensitivity : 85.6 dB (mean dB value 85.1 dB)

Effective frequency range : 58 - 20000 Hz
Maximum sensitivity in octave at 3253 Hz : 88.3 dB



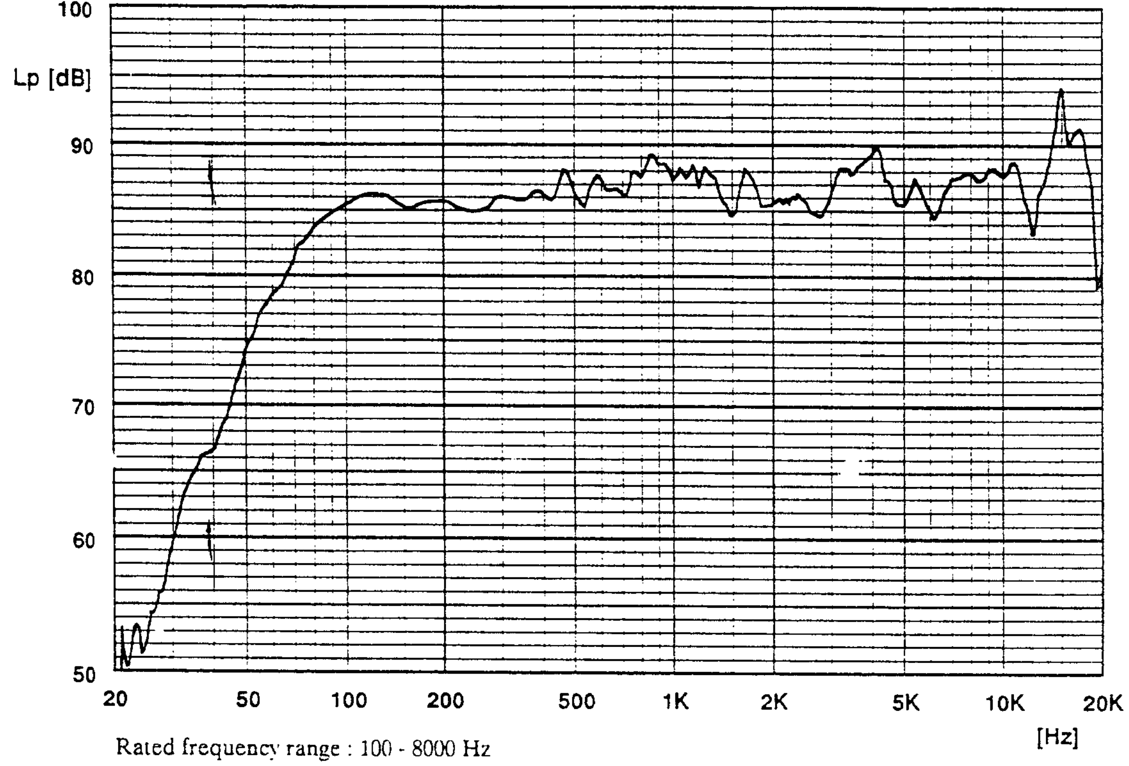
Rated impedance : 6.00 Ohm
Coil resistance : 0.00 Ohm
Resonance frequency : 36.7 Hz
Impedance peaks : 93.8 Hz, 3400.0 Hz

Type : FB70
Nr : 60.01092

Thursday, January 23, 1992, 13.13h

4

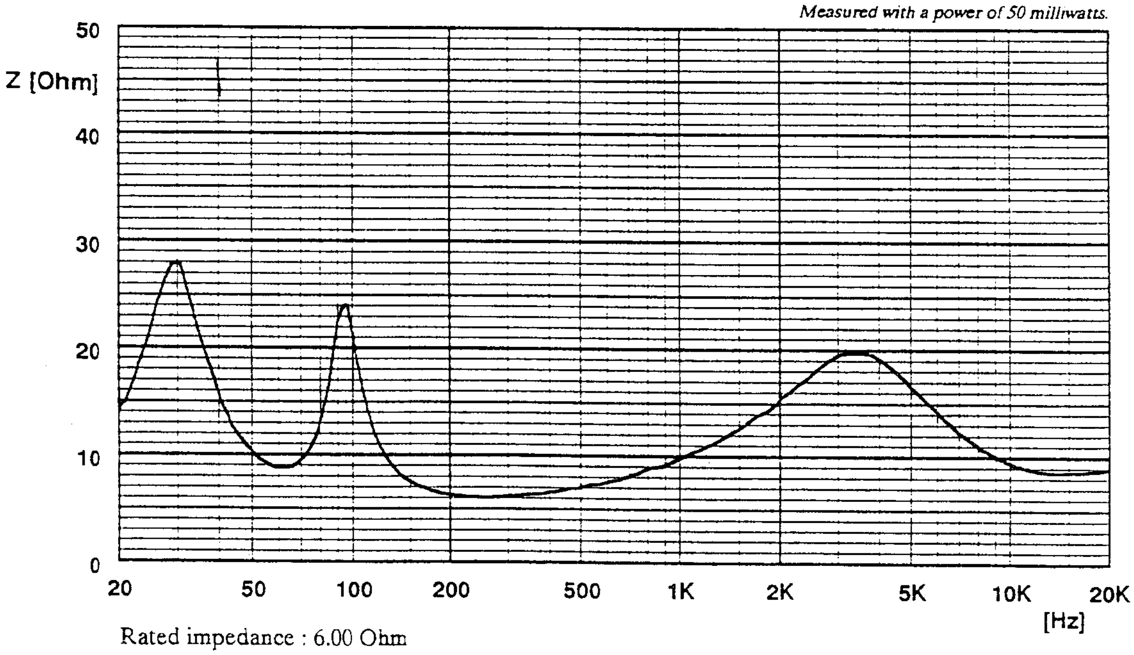
Measured at 1m with a power of 1.00 watts (Pref = 20 uPA).



Rated frequency range : 100 - 8000 Hz
Characteristic sensitivity : 86.7 dB (mean dB value 86.5 dB)

Effective frequency range : 66 - 18800 Hz
Maximum sensitivity in octave at 12728 Hz : 89.4 dB

Measured with a power of 50 milliwatts.



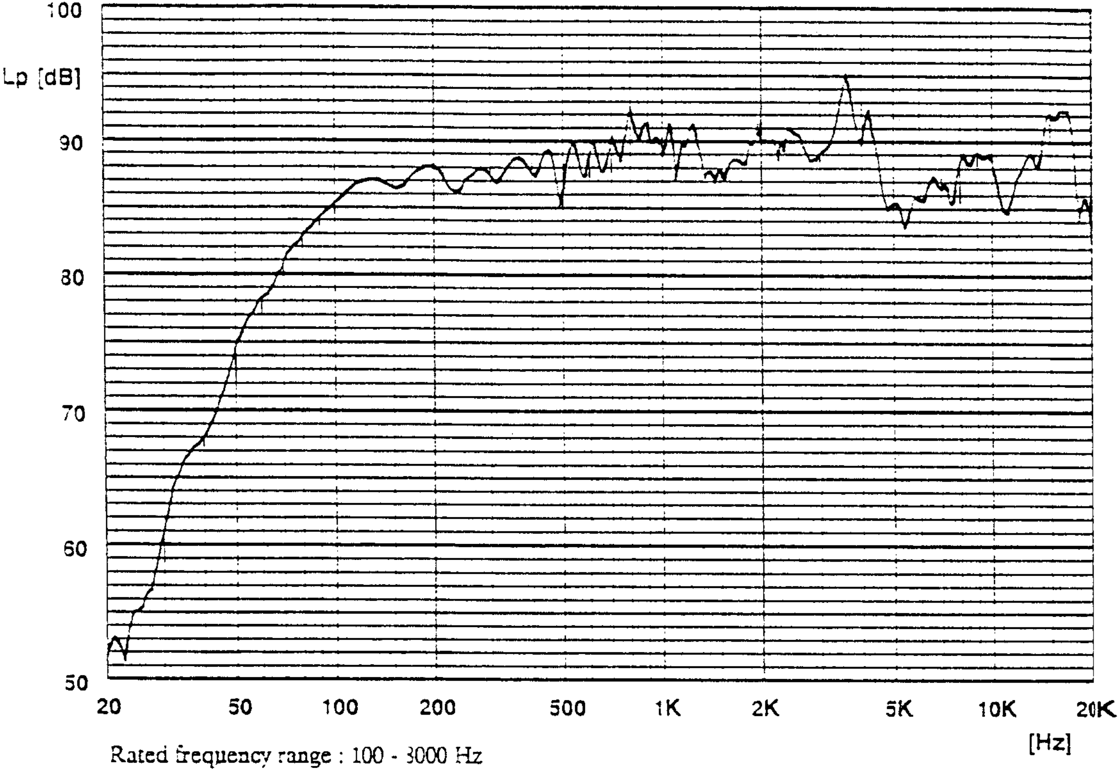
Rated impedance : 6.00 Ohm
Coil resistance : 0.00 Ohm
Resonance frequency : 29.7 Hz
Impedance peaks : 93.8 Hz, 3300.0 Hz

Type : FB80
Nr : 60.01114

Friday, January 24, 1992, 13.51h

5

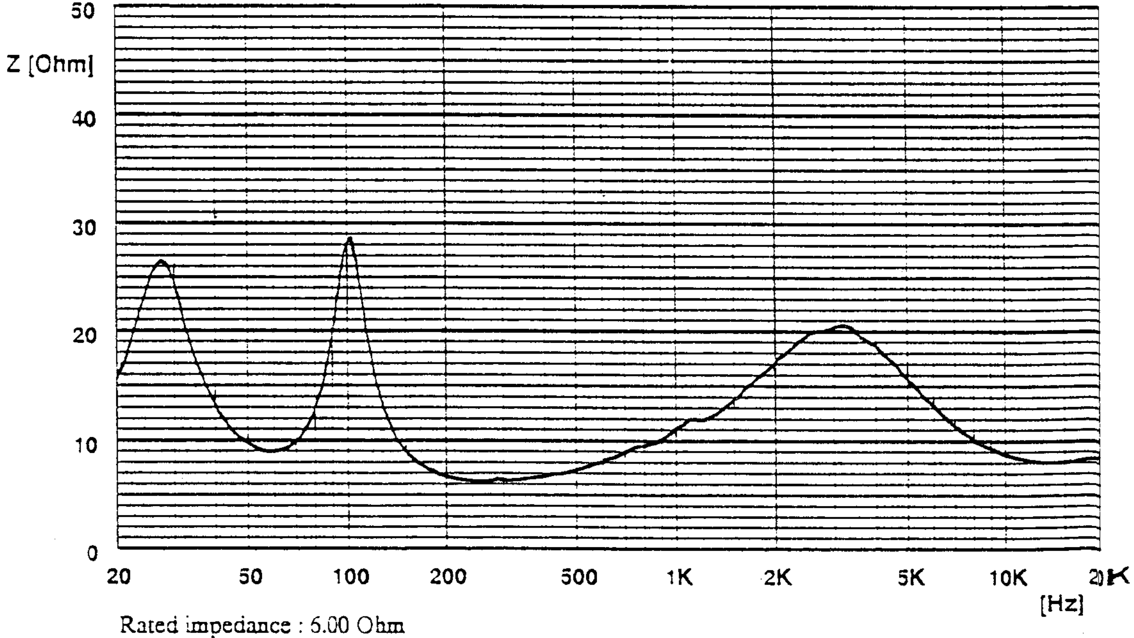
Measured at 1m with a power of 1.00 watts (Pref = 20 uPA).



Rated frequency range : 100 - 3000 Hz
Characteristic sensitivity : 88.3 dB (mean dB value 88.4 dB)

Effective frequency range : 72 - 20000 Hz
Maximum sensitivity in octave at 3111 Hz : 91.0 dB

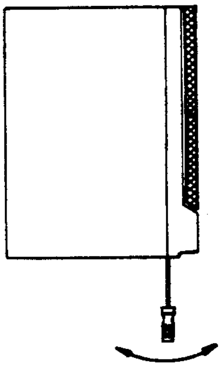
Measured with a power of 50 milliwatts



Rated impedance : 6.00 Ohm
Coil resistance : 0.00 Ohm
Resonance frequency : 27.3 Hz
Impedance peaks : 100.0 Hz, 3200.0 Hz

3. DISMANTLING INSTRUCTIONS:

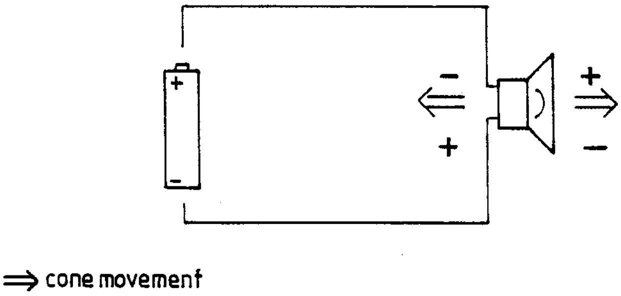
Remove the front of the loudspeakerbox (item 34 or 35) by pulling at the "front" edges.
If the frame isn't comming loose it could be usefull to use a flat screw-driver, and jerk the front loose at the bottom side of the box (see drawing).
Unscrew the speakers, and you have acces to the box.



4. SERVICING HINTS:

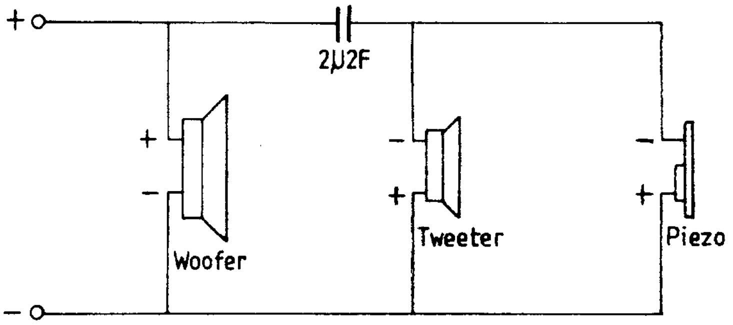
Checking the speaker polarity:

You can check the speaker polarity with a battery of 1,5 volts up to 3 volts.
When the speaker is connected "in phase", the speakercone is always moving forwards. It means the + of the battery is connected with the + of the speaker.



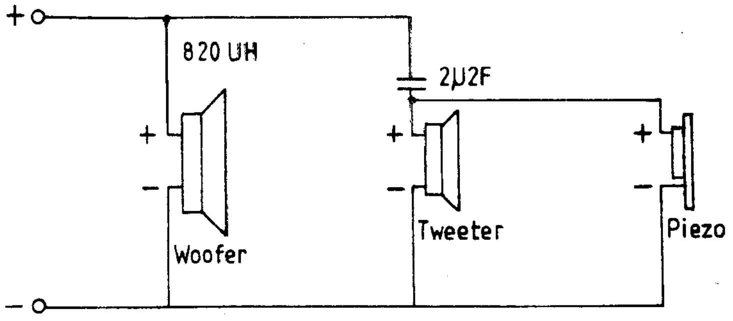
5. WIRING DIAGRAM - LIST OF ELECTRICAL PARTS

Type : FB70 FB60


+
−
2µ2F
+
−
Woofer
−
+
Tweeter
−
+
Piezo

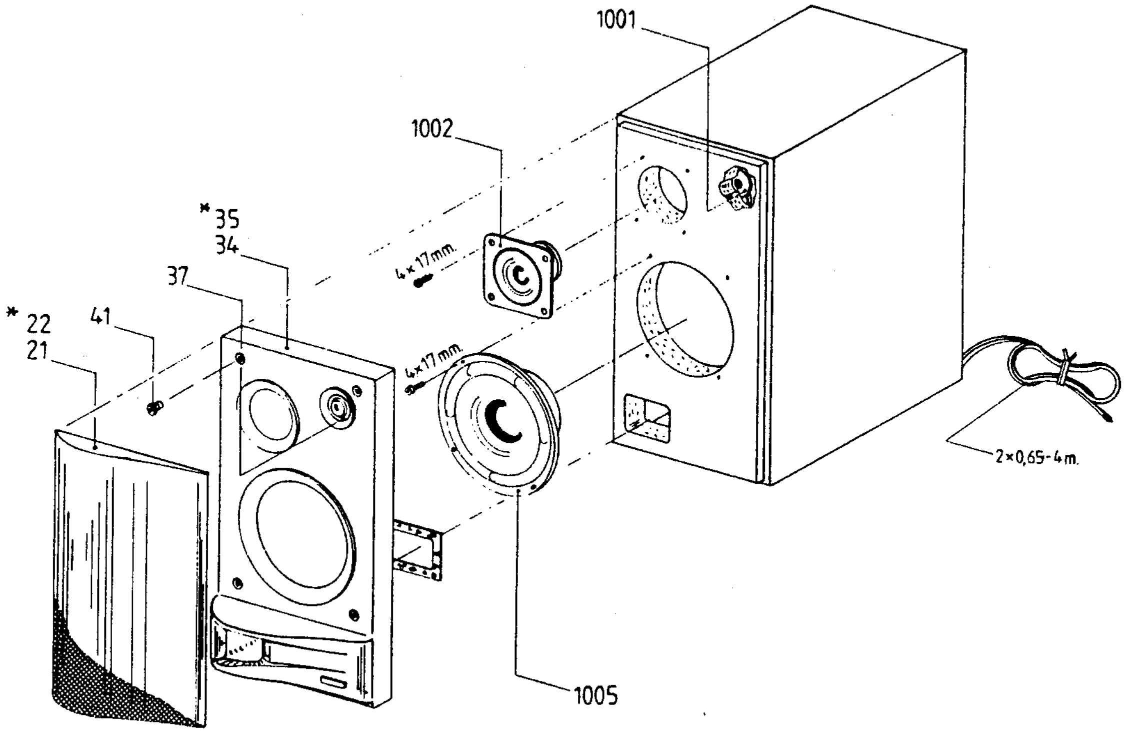
1001	4822	280	10259	PIEZO
1002	4822	240	70247	CT106FK
1005	4822	240	50326	13FK586
2001	4822	124	21435	2,2UF/100V-DC BIPOL

Type : FB80


+
−
820 UH
2µ2F
+
−
Woofer
+
−
Tweeter
+
−
Piezo

1001	4822	280	10259	PIEZO
1002	4822	240	70247	CT106FK
1005	4822	240	60331	AD 70654/W6DC
2001	4822	124	21435	2,2UF/100V-DC BIPOL

7. EXPLODED VIEUW


1001
1002
*35
34
37
*22
41
21
4×17mm.
4×17mm.
2×0,65-4m.
1005

8. LIST OF MECHANICAL PARTS

21	4822 458 40561	LEFT-VERSION
22	4822 458 40562	RIGHT-VERSION
34	4822 445 30238	LEFT-VERSION
35	4822 445 30239	RIGHT-VERSION
37	4822 240 80043	DOME
41	4822 325 80497	GROMMET